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# POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES. PROCEEDINGS OF MEETING (3RD) HELD AT CLEVELAND, OHIO ON JUNE 22, 1966. VOLUME I

Federal Water Pollution Control Administration
Washington, D.C.

22 June 1966

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Third meeting in the Matter of Pollution of the Waters of Lake Erie and its Tributaries, convened at 10:05 a.m., on June 22, 1966, at the Statler-Hilton Hotel, Cleveland, Ohio.

PERMANENT CHAIRMAN:

Mr. Murray Stein, Assistant Commissioner for Enforcement, Federal Water Pollution Control Administration, Department of the Interior

CHAIRMAN, MORNING OF JUNE 22, 1966:

Hon. Stewart L. Udall, Secretary of the Interior.

ALSO PRESENT:

Hon. James M. Quigley, Commissioner, Federal Water Pollution Control Administration

CONFEREES:

Mr. Blucher A. Poole, Technical Secretary, Indiana Stream Pollution Control Board

Mr. Loring F. Oeming, Executive Secretary, Michigan Water Resources Commission

Mr. Robert D. Hennigan, Director, Bureau of Water Resources, State of New York

Mr. Dwight Metzler, Deputy Commissioner, New York State Department of Health

CONFEREES (Continued):

Mr. Robert W. Teater, Assistant Director, Ohio Department of Natural Resources

Dr. E. W. Arnold, Director, Ohio Department of Health

Mr. George Eagle, Chief Engineer, Ohio Department of Health

Mr. Walter A. Lyon, Director, Division of Sanitary Engineering, Pennsylvania Department of Health

Mr. Larry Miller, Sanitary Engineer for Region 3 of Pennsylvania Department of Health

Mr. H. W. Poston, Federal Water Pollution Control Administration, Department of the Interior, Chicago, Illinois

PARTICIPANTS:

Grover Cook, Chief, Enforcement Activities, Federal Water Pollution Control Administration, Great Lakes Region

Ralph W. Purdy, representing the Michigan Water Resources Commission

Dr. E. W. Arnold, Director, Ohio Department of Health

PARTICIPANTS (CONTINUED):

Stanley P. Spisiak, Representing the New York State Conservation Council

OTHERS IN ATTENDANCE:

Dr. Thomas Acker, Assistant Professor of Biology, hn Carroll University, University Heights, Ohio

A. V. Agnew, Superintendent, Water and Sewage Department, City of Lorain, Ohio

Robert H. Anderson, Project Manager, Stanly Engineering, Cleveland, Ohio

Mrs. James H. Angel, Chairman, Citizens for Land and Water Use, League of Women Voters, Lakewood, Ohio

H. Duane Applequist, Coordinator, The Standard Oil Company, Cleveland, Ohio

Joseph August, Manager, Sales Tech. Service, Sohio, Cleveland, Ohio

John Barrett, Superintendent, Westerly Water Pollution Control Plant, Cleveland, Ohio

G. G. Becher, Manager, Ernst & Ernst, Cleveland, Ohio

Ralph J. Bernhagen, State Geologist, Chief, Ohio Division, Geological Survey, Ohio Department of Natural Resources, Columbus, Ohio

OTHERS IN ATTENDANCE (CONTINUED):

Stanley Berke, Shaker Heights, Ohio

Jack P. Berry, District Manager, Nalco Chemical, Solon, Ohio

Louis F. Birkel, Superintendent, Water Management, Republic Steel, Cleveland, Ohio

Charles Boatner, Assistant to the Secretary, Director of Information, Department of the Interior, Washington, D. C.

Mrs. H. E. Boehm, League of Women Voters, Cleveland, Ohio

A. D. Brandt, Manager, Industrial Health Engineering, Bethlehem Steel Corporation, Bethlehem, Pennsylvania

Theodore E. Brenner, Research Director, The Soap and Detergent Association, New York, New York

David L. Burre, Sanitary Engineer, Federal Water Pollution Control Administration, Cleveland, Ohio

Daniel B. Burke, General Manager, Radio Station WJR, Detroit, Michigan

Charles R. Collier, Assistant District Chief, United States Geological Survey, Columbus, Ohio

Thomas Colpetzer, Assistant Lake County Sanitary Engineer, Painesville, Ohio

OTHERS IN ATTENDANCE (CONTINUED):

Frederick J. Condon, Research and Development, International Pipe and Ceramics, Inc., Parsippany, New Jersey

Robert Cottrill, District Sanitary Engineer, Ohio Department of Health, Cuyahoga Falls, Ohio

Richard S. Gray, Public Relations, Cleveland Electric Illuminating Company, Cleveland, Ohio

Hugh Danaceau, Reporter, Chagrin Falls, Ohio

Charles Day, News Director, Radio Station WGAR, Cleveland, Ohio

R. J. Dougherty, Chief Sanitary Engineer, Radcoff Associates, Cleveland, Ohio

E. V. Ehrbar, Pollution Control Engineer, Lubrizol Corporation, Wickliffe, Ohio

Seba H. Estill, Izaak Walton League, Cleveland, Ohio

John C. Everett, Chief, Plant Services Division, NASA, Cleveland, Ohio

Richard Forster, Senior Information Specialist, New York State Health Department, Albany, New York

Thomas G. Frangos, Executive Director, Michigan State Legislative Committee on Water Resources Planning, E. Lansing, Michigan

Mary Fulmer, Engineer, Battelle, Columbus, Ohio

John J. Garner, Lake County Sanitary Engineer, Painesville, Ohio

OTHERS IN ATTENDANCE (CONTINUED):

Mrs. David Garland, President, League of Women Voters, Euclid, Ohio

Mrs. Ira E. Garver, Treasurer, League of Women Voters, Director, Cuyahoga River Reclamation Commission, Citizens' Coordinating Committee, Cuyahoga Falls, Ohio

Carolyn Gazdik, Secretary, Federal Water Pollution Control Administration, Cleveland, Ohio

Walter E. Gerdel, Commissioner, Division of Water Pollution Control, City of Cleveland, Ohio

Thomas M. Gibson, Manager, Hudson Worthington Associates, Hudson, Ohio

Richard W. Gilbert, District Sanitary Engineer, Ohio Department of Health, Cuyahoga Falls, Ohio

James A. Gouck, Supervisor, Effluent Control, Allied Chemical Corporation. Buffalo, New York

Nicholas M. Graziano, Treasurer, Rand Development Corporation, Cleveland, Ohio

Stephen B. Hagenboom, Chemist, Man-Gill Chemical Company, Euclid, Ohio

G. A. Hall, Engineer-Secretary, Water Pollution Control Board, Ohio Department of Health, Columbus, Ohio

George Harlow, Director, Lake Huron Program Office, Grosse Ile, Michigan

Robert P. Hartley, Oceanographer, Federal Water Pollution Control Administration, Cleveland, Ohio

OTHERS IN ATTENDANCE (CONTINUED):

Richard D. Hall, Staff Engineer, Diamond Alkali Company, Cleveland, Ohio

Frank Hall, Federal Water Pollution Control Administration, Chicago, Illinois

Ted Heineman, Consulting Engineer, Mentor, Ohio

G. LaMar Hubbs, Director, Lake Erie Program Office, Cleveland, Ohio

George W. Huber, Chemist, Cleveland Electric Illuminating Company, Cleveland, Ohio

Mrs. J. Louis Hanna, Water Resource Study Chairman, League of Women Voters, Euclid, Ohio

Lansing C. Hoskins, M.D., Committee on Pollution of the Cleveland Academy of Medicine, Cuyahoga County Medical Society, Cleveland, Ohio

Paul A. Johnson, Water Quality Coordinator, City of Akron, Ohio

Cliff R. Hindman, Associate, Burgess & Niple, Ltd., Mentor, Ohio

Phil Jones, News Editor, Radio Station WJR, Detroit, Michigan

Edward F. Kehoe, Administrative Assistant, Congressman M. A. Feighan, Cleveland, Ohio

Jim Kerwin, Reporter, Detroit News, Detroit, Michigan

OTHERS IN ATTENDANCE (CONTINUED):

F. W. Kittrell, Chief, Pollution Evaluation, Federal Water Pollution Control Administration, Cincinnati, Ohio

K. L. Kollar, Director, Water Industries and Engineering Services, United States Department of Commerce, Washington, D. C.

Ray Kozlowski, News Editor, Radio Station WGAR, Cleveland, Ohio

Robert G. Klausner, Rackoff Associates, Cleveland, Ohio

Carole Kramer, Federal Water Pollution Control Administration, Cleveland, Ohio

Edward A. Kramer, Sanitary Engineer, Federal Water Pollution Control Administration, Cleveland, Ohio

Byron S. Krantz, Field Representative to Senator Stephen M. Young, Cleveland, Ohio

Lawrence R. Kumnick, Loss and Waste Control Engineer, Sun Oil Company, Toledo, Ohio

Frank Lectaks, Editorial Writer, WJW Radio and TV, Cleveland, Ohio

Tom LaRochelle, Reporter, Akron Beacon Journal, Northampton, Ohio

Rosanne Light, Federal Water Pollution Control Administration, Washington, D. C.

OTHERS IN ATTENDANCE (CONTINUED):

Mrs. George Lowry, League of Women Voters, Euclid, Ohio

James McDonald, Construction Program Representative, Federal Water Pollution Control Administration, Chicago, Illinois

Albert M. Lord, Senior Engineering Specialist, TRW, Inc., Cleveland, Ohio

Kenneth M. Mackenthun, Aquatic Biologist, Federal Water Pollution Control Administration, Cincinnati, Ohio

D. R. Malthaner, Chief Metallurgist, General Motors Corporation, Cleveland, Ohio

John Mahoney, Reporter, WJW-TV, Cleveland, Ohio

Philip Q. Maiorana, Superintendent, City of Lorain Sewage Treatment Plant, Lorain, Ohio

Mrs. Don W. Maurus, League of Women Voters, Wickliffe, Ohio

Mrs. L. Merkle, Sr., League of Women Voters, Cleveland, Ohio

Stephen Megregian, Deputy Project Director, Great Lakes-Illinois River Basins Project, Chicago, Illinois

Mrs. Lillian Miller, Water Chairman, League of Women Voters, Cleveland, Ohio

OTHERS IN ATTENDANCE (CONTINUED):

Hal Morgan, News Reporter, WJW Station, Cleveland, Ohio

Henry Moss, Consultant, Monsanto Company, St. Louis, Missouri

Don Mortimer, Assistant Executive Secretary, Academy of Medicine, Cleveland, Ohio

Barbara J. Nelson, Engineering Aide, Citizens for Land and Water Use, Akron, Ohio

George Newell, Engineer, Sewer Design, City of Cleveland, Ohio

Richard F. Noland, Principal Engineer, Burgess & Niple, Ltd., Columbus, Ohio

William E. Norris, Sanitary Engineer, Burgess & Niple, Ltd., Columbus, Ohio

Mary Nyests, Engineering Aide, Water Quality Management, Akron, Ohio

Mrs. Burks Oakley, League of Women Voters, Cleveland, Ohio

Dr. Paul Olynyk, Associate Professor, Cleveland State University, Cleveland, Ohio

Harriet Roth Parsons, Attorney, Willoughby, Ohio

R. G. Paulette, Project Manager, Stanley Engineering Company, Uscatine, Iowa

Ben Phlegar, U.S. News & World Report, Detroit, Michigan

OTHERS IN ATTENDANCE (CONTINUED):

Rheta Piere, Federal Water Pollution Control Administration, Washington, D. C.

F. F. Pokorny, Optomestrist, Anti-Spraying Committee, Cleveland, Ohio

Ralph Porges, Deputy Chief, Technical Advisory and Investigations, Federal Water Pollution Control Administration, Cincinnati, Ohio

G. D. Pratt, Sanitary Engineer, Federal Water Pollution Control Administration, Cleveland, Ohio

Mrs. A. R. Purins, Cleveland, Ohio

H. J. Rand, President, Rand Development Corporation, Cleveland, Ohio

Art Robinson, Public Relations Officer, Ohio Department of Health, Columbus, Ohio

John E. Richards, Engineer-in-Charge, Sewage and Industrial Wastes, Ohio Department of Health, Columbus, Ohio

Frazier Reams, Jr., State Senator, Toledo, Ohio

William J. Riley, Sanitary Engineer, Federal Water Pollution Control Administration, Chicago, Illinois

Herbert Salsbury, Supervisor, Water and Waste Treatment, Campbell Soup Company, Napoleon, Ohio

OTHERS IN ATTENDANCE (CONTINUED):

N. E. Sanders, Resident Engineer, U. S. Army Corps of Engineers, Cleveland, Ohio

Neil E. Seyler, Superintendent, Operations, Allied Chemical Corporation, Painesville Plant, Morristown, New Jersey

Ruth Seymour, League of Women Voters, Cuyahoga Falls, Ohio

Albert M. Shannon, Chief, Water and Sewage Treatment, City of Detroit, Michigan

Allan M. Shapiro, Data Processing Chief, Lake Erie Program Office, Cleveland, Ohio

Leila Shrigawa, Secretary, Three Rivers Watershed Organization, League of Women Voters, Cleveland, Ohio

George D. Simpson, Partner, Havens & Emerson Consulting Engineers, Cleveland, Ohio

William R. Sigler, Commercial Analyst, Diamond Alkali, Cleveland, Ohio

Willard F. Schade, Partner, Willard F. Schade & Associates, Cleveland, Ohio

Edward F. Stevenson, Civil Engineer, NASA, Cleveland, Ohio

Mrs. Kenneth L. Stevens, President, Citizens for Land and Water, Akron, Ohio

OTHERS IN ATTENDANCE (CONTINUED):

Jack M. Stewart, President, Industrial Technological Associates, Inc., Cleveland, Ohio

A. D. Staursky, Assistant Director of Public Relations, United States Steel Corporation, Cleveland, Ohio

Stanley H. Suttom, Partner, Havens & Emerson, Cleveland, Ohio

David W. Swetland, Western Reserve Historical Society, Natural Science Museum, Cleveland Health Museum, Cleveland, Ohio

Nelson S. Talbott, Cleveland, Ohio

J. R. Thrasher, Project Engineer, American Industrial Disposal, Inc., Pittsburgh, Pennsylvania

John S. Tygert, Project Engineer, New York State Department of Health, Buffalo, New York

Richard A. Vanderhoof, Regional Director, Ohio Basin, Federal Water Pollution Control Administration, Cincinnati, Ohio

Effie M. Wandland, League of Women Voters, Willoughby, Ohio

R. W. Warner, Waste Disposal Supervisor, Pittsburgh Plate Glass Company, Barberton, Ohio

P. J. Weaver, Procter and Gamble, Cincinnati, Ohio

Eugene W. Weber, Commissioner, International Joint Commission, Washington, D. C

OTHERS IN ATTENDANCE (CONTINUED):

Edward T. Wellejus, Editorial Writer, Erie Times, Erie, Pennsylvania

Ed Whipple, Columbus Correspondent, Toledo Blade, Ohio

John J. Wirts, Chemical Engineer, Easterly Pollution Control Center, Cleveland, Ohio

Donald J. Yark, Director of Public Utilities, City of Toledo, Ohio

George R. Tallon, Senior Scientist, Koppers Company, Inc., Monroeville, Pennsylvania

Lyle A. Miller, Consultant, James Campbell Smith, Inc., Willoughby, Ohio

# PROCEEDINGS

## OPENING STATEMENT

## BY

## MR. MURRAY STEIN

MR. STEIN: The Meeting is open.

This is the Third Meeting in the Matter of Pollution of the Waters of Lake Erie, held under the provisions of the Federal Water Pollution Control Act.

In order to save time, I wonder if we may have all the conferees at the head table introduce themselves and their States. Let's start with you, Mr. Hennigan.

MR. HENNIGAN: Robert D. Hennigan, Director of the Bureau of Water Resources, New York State Department of Health.

MR. METZLER: Dwight Metzler, Deputy Commissioner, State Health Department, New York, in charge of the water pollution program.

MR. TEATER: Bob Teater, Assistant Director, Department of Natrual Resources, Ohio, representing Fred

Morr, who is one of the Ohio conferees.

MR. EAGLE: George Eagle, Chief Engineer, Ohio Department of Health.

DR. ARNOLD: Dr. Arnold, Director of the Ohio Department of Health, and Chairman of the Ohio Water Pollution Control Board.

MR. QUIGLEY: Jim Quigley, Commissioner of the Federal Water Pollution Control Administration.

MR. POOLE: Blucher Poole, Technical Secretary of the Indiana Stream Pollution Control Board.

MR. OEMING: Loring F. Oeming, Executive Secretary, Michigan Water Resources Commission, Conferee.

MR. LYON: Walter Lyon, Director of the Division of Sanitary Engineering, Pennsylvania Department of Health.

MR. MILLER: Larry Miller, Regional Sanitary Engineer, Northwestern Section of Pennsylvania, Pennsylvania State Department of Health.

MR. STEIN: And, as you know, my name is Murray Stein and I am from headquarters, Department of the Interior.

This is the first look you have at us in a new Department, the Department of the Interior. I know I have found it refreshing being in Interior, and I suspect you will find the same thing.

We do have a Secretary of the Interior who has an abiding and deep interest in this program. He has come here with us and will chair this Meeting as long as he is here.

I would like to introduce at this time the Honorable Secretary of the Interior, Stewart Udall.

(Rising Applause.)

## STATEMENT OF THE HONORABLE STEWART L. UDALL, SECRETARY OF THE INTERIOR

SECRETARY UDALL: Thank you very much, Murray.

I want to be very brief, because I am here primarily to listen.

I will have some questions to ask, I am sure, as we go along, and I will have some observations to make when we finish this morning.

Today, before my participating in the Meeting this morning, Congressman Vanik and the Mayor invited me to take a noon trip along the Cuyahoga. We are going to sort of get the feel or the smell of some of your problems during the noon hour.

Then I have an interesting trip this afternoon on the old Ohio Canal and will go down to Akron and Canton.

Congressman Vanik has made the suggestion that perhaps here is an opportunity for a major conservation project that my Department in the Federal Government might be involved in, of preserving this old canal and its environs as a fine recreation area for this region.

I think, Congressman Vanik, if I may say so,

Secretary Udall

Ohio is one of the few States where the National Park Service of the Federal Government does not have a major conservation project. Maybe this is the place where we should do it.

President Johnson has expressed to me many times that we need to make the big effort in air pollution, water pollution and outdoor recreation where the people are, near the big cities. We will look into this with great interest.

With regard to the Meeting this morning, I have only two or three observations that I would like to make.

This is the first conference of this kind I have participated in since the Water Pollution Control Administration was transferred to my Department from the Department of Health, Education, and Welfare six weeks ago.

I came here for a deliberate reason. I came on the recommendation of Commissioner Quigley and Murray Stein, because I think this is one of the real battlegrounds or proving grounds with regard to the war on water pollution.

The Great Lakes represent the finest fresh water resource that this Nation has. The lakes are in trouble, and the one that is in the most trouble is Lake Erie.

It seems to me that if we can lick the water pollution problem in the next few years on Lake Erie, we can lick the problem nationwide. If we can't get on top of it here, we are obviously going to fail.

Therefore, nearly a year after the conferences that were held in August, I think it is very vital that we come back here and, in effect, have a report session and find out what is being done, find out what needs to be done. This is particularly true in light of the fact that my Department is now in the picture and we want, with all of our responsibilities, to focus clearly on what is being done.

So I am delighted to preside here this morning and participate in this Meeting.

Commissioner Quigley and Murray Stein have suggested the procedure this morning, because I would like to hear the major presentations. Maybe we ought to hear a presentation of what the Federal Government has and has not been doing -- for us to confess our sins and shortcomings at the beginning. Then perhaps we will hear from Michigan, Ohio, Indiana, New York and Pennsylvania, in that order.

Let us proceed ahead with the presentations and reports this morning. We can have a lively discussion as we go ahead.

I was scheduled initially to leave at 11:30, but will stay a little later, if necessary, in order to get right down to the crux of the matter.

Thank you very much.

(Applause.)

## STATEMENT OF H. W. POSTON, FEDERAL CONFEREE, FEDERAL WATER POLLUTION CONTROL ADMINISTRATION, DEPARTMENT OF THE INTERIOR, CHICAGO, ILLINOIS

MR. POSTON: My name is H. W. Poston, and I am the Federal Conferee representing the United States Department of the Interior for the purposes of the Meeting in the matter of pollution of Lake Erie and its tributaries. I am also the Acting Regional Director of the Great Lakes Region of the Federal Water Pollution Control Administration.

The enforcement conferences held in Cleveland and Buffalo in August of 1965 resulted in a set of conclusions and recommendations which were unanimously agreed upon by the conferees and were adopted subsequently by the Secretary of Health, Education, and Welfare. Among these recommendations, several required action on the part of the Federal Water Pollution Control Administration. The recommendation numbers to which I will refer are those of the Summary of the Second Session of the Lake Erie Enforcement Conference held in Buffalo on August 10-12, 1965. I will report briefly on the activities of our agency in furthering the aims of those recommendations for which we have a direct responsibility.

## RECOMMENDATION #11

Recommendation #11 requires that:

> "Combined storm and sanitary sewers are to be prohibited in all newly developed urban areas, and eliminated in existing areas wherever feasible."

In furtherance of this recommendation, the Federal Water Pollution Control Administration has reviewed plans for several urban renewal projects financed by the United States Department of Housing and Urban Development in the Lake Erie drainage basin which originally proposed the construction of combined sewers. Our recommendation for the construction of separate storm and sanitary sewers will be complied with at the following projects:

1) University-Euclid Urban Renewal Project, Cleveland, Ohio;

2) Vistula Meadows Urban Renewal Project, Toledo, Ohio;

3) Cascade Urban Renewal Project, Akron, Ohio.

H. W. Poston

## RECOMMENDATION #15

Recommendation number 15 requires the conferees to meet with "representatives of Federal, State, and local officials responsible for agricultural, highway and community development programs for the purpose of supporting satisfactory programs for the control of runoff which deleteriously affects water quality in Lake Erie."

On June 17, 1966, a meeting was held in Pittsburgh to discuss pollution caused by highway construction. In attendance were top-ranking officials of the United States Bureau of Public Roads, the Federal Water Pollution Control Administration, the highway departments of Ohio and Pennsylvania, and the Ohio State Department of Health. Plans are being made to meet with representatives of agriculture and planning agencies, as recommended in the Summary.

The Federal and State highway officials indicated great interest in minimizing pollution, and have received an Instructional Memorandum from the Federal Highway Administrator to conduct the Federal highway program in such a way as to be in compliance with President Johnson's Executive Order No. 11258. (Pertaining to pollution from

Federal or Federally financed projects.)

The State highway engineers reported that their agencies are taking steps to carry out the elements of the Instructional Memorandum issued by the Federal Highway Administrator. They stated that the greatest pollutional effect is erosion of soils during road construction. They believe there has been progress in getting earlier ground cover, but erosion during construction is still the biggest control problem.

Further conferences will be held as required to discuss specific remedial steps that can be taken to control pollution caused by soil erosion during highway construction.

## RECOMMENDATION #19

Recommendation #19 obliged the Federal Water Pollution Control Administration to "establish water pollution surveillance stations at appropriate locations on Lake Erie" and to "assist the States at such times as requested" in the surveillance of the tributaries.

A Federal surveillance program has been established in the western portion of Lake Erie covering Michigan and Ohio waters. Plans are presently being prepared which will provide a more complete surveillance program on Lake Erie to evaluate the effectiveness of pollution control practices in local and lake-wide situations, to determine needs in local and lake-wide pollution situations, and to determine cause and effect relationships among chemical, biological and physical factors in lake eutrophication.

To evaluate the effectiveness of pollution control practices in Lake Erie, seasonal and long-term changes will be measured in mid-lake water in all three of the lake's basins. Much of this can be done most efficiently by automatic recording of five factors:

(1) Dissolved oxygen;
(2) conductivity;
(3) water temperature;
(4) water transparency; and
(5) wind velocity and direction.

In addition to automatic monitoring, lake survey cruises will be necessary at approximately two-week intervals at ten preestablished stations in each of the three lake basins. Lake bottom samples will also be collected at each of the stations once each in the spring, summer and fall.

Surveillance of local effects of pollution control practices will necessitate periodic sampling near lakeshore outfalls, the mouths of tributaries, and at dredge dumping grounds within the lake.

Sludge deposits at the mouths of each of the tributaries and at lake bottom dredge dump areas will be sampled seasonally.

The East Harbor, Lorain, Cleveland, Erie, Dunkirk and Buffalo beach areas will be sampled periodically to monitor bacterial water quality.

## RECOMMENDATION # 20

Recommendation #20 gives the Federal Government responsibility "for developing up-to-date information and experience concerning effective phosphate removal and the control of combined sewer systems" and requires that this information "be reported to the conferees regularly."

Information has been made available by the Federal Water Pollution Control Administration to the States and municipalities on both phosphate removal and on control of combined sewer systems. The Technical Committee heard from Federal Water Pollution Control Administration scientists and engineers and private consultants were made available.

H. W. Poston

The Chief of the Technical Services Branch, Federal Water Pollution Control Administration, met with the Michigan Water Resources Commission to relate recent experiences in phosphate removal. Several sites are now being surveyed in the Lake Erie area for a field demonstration of phosphate removal at one or more operating sewage treatment plants.

The new Federal Water Quality Act of 1965 provides for 50 percent grants for demonstrations of sewer separations, and some of the cities in the Lake Erie conference area have applied.

An annotated selected bibliography of the biological effects of "Nitrogen and Phosphorus in Water" has been prepared and distributed by our agency, and the Federal Water Pollution Control Administration is now preparing a summary review of the literature and a report on research activities on phosphate removal.

## RECOMMENDATION #21

Recommendation #21 states that:

> "Regional planning is often the most logical and economical approach toward meeting pollution problems. The water pollution control agencies of

Michigan, Indiana, Ohio, Pennsylvania, and New York, and the Department of Health, Education, and Welfare will encourage such regional planning activities."

Regional planning on pollution problems was furthered by the provision of the Water Quality Act of 1965 that permits construction grant increases on 10 percent where a sewage treatment plant project is certified as conforming with a comprehensive metropolitan area plant. Such increased grants have been made to Detroit, $60,000; Oakland County, Michigan, $18,624; the 8-½ Mile Relief Drain in Macomb County, Michigan, $110,715; and Sylvania, Ohio, $20,340. The total 10 percent grant increases amount to $209,679. Meetings have also been held with some conference area regional planning agencies.

In addition to the 10 percent construction grant increases, a total of 15 regular construction grants, amounting to $4,089,190, in support of eligible construction of $14,121,147, have been made to communities in the Lake Erie Basin since last summer.

## RECOMMENDATION #24

Recommendation #24 of the conference summary requires that needed waste treatment facilities at Federal installations are to be completed and in operation by August of 1966. This recommendation supports Executive Order 11258, which requires that all Federal installations provide secondary treatment facilities.

There are 323 Federal installations in the conference area, 284 of which discharge waste waters to municipal sewer systems. The treatment provided by these municipal systems is as follows:

a) 3 installations discharge to municipal systems providing no treatment.

b) 79 installations discharge to municipal systems providing primary or intermediate treatment.

c) 202 installations discharge to municipal systems providing secondary treatment.

Of the installations or portions of installations not discharging to municipal systems, 16 are Defense Area Housing Units leased by the Army and for which the Federal Government presently exercises no control over the waste treatment facilities provided.

It is a pleasure to report that all except one major Federal installation in the conference area will have adequate treatment facilities by the deadline date of August

1966. Plans are under way to place the final major Federal installation in compliance by next year.

SECRETARY UDALL: Mr. Poston, may I stop you at that point? What is that installation?

MR. POSTON: The installation is the NASA Lewis Laboratory.

SECRETARY UDALL: And what are our plans in terms of deadlines to get on top of that problem?

MR. POSTON: The plans are under way for this particular installation to be financed and put under construction by a year from July.

SECRETARY UDALL: Is there money in the new fiscal year budget that begins next year to accomplish this, as far as you know?

MR. POSTON: I understand that there is. This will move ahead.

SECRETARY UDALL: This is, I take it, not a small project, but a rather large one?

MR. POSTON: I think there is a gentleman back here who might give us more information.

MR. JOHN C. EVERETT: This installation at NASA Lewis now has a primary treatment plant, but this new job will cost between $50,000 and $100,000, depending on the salvage of the old plant. Engineering studies are under way, and we will proceed with construction when the funds are available, as soon as possible. There is now primary treatment at the particular plant.

SECRETARY UDALL: The reason that I wanted particularly to focus on that is that I don't think we can be too harsh with other people for not meeting the August deadline if we haven't met it ourselves. I think that we should know precisely what is being undertaken and what we propose to do.

The other thing that strikes me with regard to the Federal Government putting its house in order, Mr. Poston, is the previous paragraph, that in these defense area housing units leased by the Army for which the Federal Government presently exercises no control over waste treatment facilities, it just seems to me that we need to work with all of the other Federal agencies from here on prospectively in terms of leases and the Federal Government's activities. If we are going to set high standards, the Federal Government must lead the way. I think that this should apply both to the facilities that it owns and to the facilities that it leases.

(Applause.)

MR. POSTON: I would hasten to add, Mr. Secretary, that we haven't given up on this, and we are pursuing this matter.

MR. STEIN: If I may say something here, we did, as Mr. Poston mentioned before, effectuate a separation of storm and sanitary sewers in urban renewal projects.

I think these three projects -- and I think the press here was very active in this -- set a policy for the country.

Now urban renewal will not permit any combined sewers in any of its budgets throughout the country.

I think this may be a case where we may get together with the Defense Department and be sure that the leases contain appropriate provisions. We might try to do that retroactively for existing leases as they are renewed.

SECRETARY UDALL: Go right ahead.

MR. POSTON: I will proceed with Recommendation # 25.

H. W. Poston

## RECOMMENDATION #25

Recommendation #25 states that representatives of the United States Army Corps of Engineers are to meet with the Conferees, develop and put into action a program for disposal of dredged material in Lake Erie and its tributaries which will satisfactorily protect water quality. Such a program is to be developed within six months after the issuance of this summary and effectuated as soon as possible thereafter.

On September 24, 1965, a meeting was held in Washington with representatives of the Chief of the Corps of Engineers and the Federal Water Pollution Control Administration. The problem of disposal of dredged material was discussed, and it was decided that the Corps would develop a plan for disposal that would minimize pollutional effects. Later the Corps asked the Federal Water Pollution Control Administration for economic justification for the preliminary estimate of the additional expense of disposal of dredging in diked areas.

The Federal Water Pollution Control Administration is making a study of cost benefits that may be derived from disposal of dredged material in diked areas. Studies in this matter will be completed in about two months.

The Corps of Engineers has written a statement that I will read into the record of this meeting. This is a letter to the Chairman of the Conferees, Lake Erie Enforcement Conference, Cleveland, Ohio, dated 21 June 1966:

"Dear Mr. Chairman:

"The following is a summary of the actions the Corps of Engineers has taken following the conferees' conference of last August.

"A meeting was held in Washington, D. C. on 24 September 1965 relative to Paragraphs 24 and 25 of the 'Preliminary Recommendations and Conclusions' of the conferees of the conferences held in Cleveland, Ohio and Buffalo, New York during August 3 to 12, 1965, on pollution of interstate and intrastate waters of Lake Erie. This meeting was attended by representatives of Health, Education, and Welfare and the Corps of Engineers.

"Subsequent to the above meeting, a report was prepared by the Buffalo and Detroit Engineer Districts as to the feasibility of providing alternate diked disposal areas at fifteen Lake

"Erie Projects, including the Detroit and Rouge River Projects. The report was forwarded to the Office, Chief of Engineers on 11 February 1966. The first cost of providing the diked disposal areas with a 10-year life was estimated to be about $110 million, which together with the added dredging costs would amount to an annual charge of about $16 million over and above the cost of disposal by present methods.

"The report has been under review in the Office, Chief of Engineers. On 11 April 1966, the Office, Chief of Engineers wrote a letter to the Honorable John W. Gardner, Secretary of Health, Education, and Welfare, in which data were requested as to the monetary benefits to be realized from the change to using diked disposal areas in lieu of open lake dumping of dredged materials in order to complete our analysis and make recommendation to higher headquarters. On 26 May 1966, a follow-up letter was written to the Honorable Stewart L. Udall, Secretary of the Interior, enclosing a copy of the above letter since the pollution problem had, in the interim, been transferred from Health, Education, "and Welfare to the Interior Department. To date, the Office, Chief of Engineers has had no reply to the above letters and has suspended further work on evaluating the situation and moving toward correction thereof until the requested data are received. Upon receipt of this information, you may be assured that the Corps will follow through on the problem with all diligence.

"Sincerely yours,
/s/ Roy T. Dodge
Brigadier General, USA
Division Engineer"

## RECOMMENDATION #26

Finally, Recommendation #26 called for the conferees to "establish a Technical Committee as soon as possible which will evaluate water quality problems in Lake Erie relating to nutrients and make recommendation to the conferees within six months after the issuance of this Summary." The conferees developed a specific mission for the committee.

On December 17, 1965, the Technical Committee was

H. W. Poston

formally appointed and has since met with representatives of Federal, State and local agencies as well as consultants from various midwest universities. Mr. Grover Cook, Chief of the Enforcement Activities in the Great Lakes Region, served as chairman for this committee and is here today to summarize the Technical Committee's recommendations to the conferees.

I will call on Mr. Cook at this time.

## STATEMENT OF GROVER COOK, CHIEF, ENFORCEMENT ACTIVITIES, FEDERAL WATER POLLUTION CONTROL ADMINISTRATION, GREAT LAKES REGION

MR. COOK: Secretary Udall, Mr. Quigley, Conferees, **Ladies** and Gentlemen: Recommendations to the Lake Erie Enforcement Conferees by the Lake Erie Enforcement Conference Technical Committee on Nutrients, June 22, 1966.

## BACKGROUND

At the request of the Honorable James A. Rhodes, Governor of the State of Ohio, the Secretary of the Department of Health, Education and Welfare, under authority granted in Section 8 of the Federal Water Pollution Control Act of 1961, on June 23, 1965 called a conference on pollution of Lake Erie and its tributaries. The conference was held in two sessions, in Cleveland on August 3-5, 1965 and in Buffalo on August 10-12, 1965. The conferees were as follows:

Mr. B. A. Poole, Indiana
Mr. Loring Oeming, Michigan
Dr. E. W. Arnold, Ohio
Mr. George Eagle, Ohio
Mr. Fred Morr, Ohio

Mr. Richard Boardman, Pennsylvania
Mr. Robert Hennigan, New York
Mr. H. W. Poston, FWPCA

The conference chairman was Mr. Murray Stein, Federal Water Pollution Control Administration, Washington, D. C.

After hearing a Federal report on pollution in the conference area, reports on pollution control activities in each of the five States, and statements by others, the conferees agreed unanimously on a summary containing conclusions and recommendations that was later issued by the Secretary of the Department of Health, Education, and Welfare on November 12, 1965. A copy of the conference summary is attached as Appendix A.

One of the summary recommendations stated:

> "The conferees will establish a Technical Committee as soon as possible which will evaluate water quality problems in Lake Erie relating to nutrients and make recommendations to the conferees within six months after the issuance of this Summary."

At a conferees meeting in Cleveland on September 1, 1965 members of the Technical Committee were selected. On December 17, 1965 the conferees met with the designated committee members and the Lake Erie Technical Committee on nutrients was formally established. The following members and their alternates were appointed:

| STATE | MEMBER | ALTERNATES |
|---|---|---|
| Michigan | Carlos Fetterolf | --- |
| Indiana | Perry Miller | John Winters |
| Ohio | J. E. Richards | George Garrett |
| Pennsylvania | Walter Lyon | Daniel Bardarik<br>Paul Heitzenrater |
| New York | Robert Hennigan | Donald Stevens |

Grover Cook, Federal Water Pollution Control Administration, was appointed Chairman, and Frank Hall, Federal Water Pollution Control Administration, served as Secretary.

## INTRODUCTION

At the September 1, 1965 meeting the conferees also outlined the mission of the committee. The committee was asked to investigate the following aspects of Lake Erie problems:

(1) Determine the situation, past and present, in Lake Erie with regard to nutrient levels and the related consequences. Also determine how the existing situation would be modified by various pollution control methods.

(2) Determine the nutrient levels or concentrations which constitute interstate pollution of Lake Erie.

(3) Determine the nutrient levels or concentrations which should be established as water quality objectives in various parts of Lake Erie.

(4) Determine the sources of nutrients entering Lake Erie, and the percentages originating from: detergents; other municipal wastes; industrial wastes; and agricultural land use.

(5) Determine the nutrient balance of Lake Erie.

(6) Identify the various nutrients affecting Lake Erie water quality and determine which are susceptible to control.

An organizational meeting of the committee was held on December 16, 1965, at which time it was decided that experts in special areas related to nutrient enrichment of lakes, and particularly those having worked on Lake Erie, should be called in for consultation with the committee.

Grover Cook

The following advised the committee. Their assistance was greatly appreciated.

Dr. Edward Martin, FWPCA, Washington

Mr. C. E. Herdendorf, Ohio Department of Natural History, Sandusky

Dr. Alfred M. Beeton, University of Wisconsin at Milwaukee

Dr. Gerard Rohlich, University of Wisconsin

Dr. Matthew Hohn, Central Michigan University

Mr. John Neil, Ontario Water Resources Commission

Mr. Stephen Megregian, FWPCA, Chicago

Dr. Richard Engelbrecht, University of Illinois

Dr. Stanford Smith, U. S. Bureau of Commercial Fisheries, Ann Arbor

The following also provided information:

Mr. John Carr, U. S. Bureau of Commercial Fisheries, Ann Arbor

Mr. John Wirts, Cleveland Easterly Pollution Control Center

Mr. Kenneth Biglane, FWPCA, Washington

Mr. G. LaMar Hubbs, FWPCA, Cleveland

Mr. Robert Hartley, FWPCA, Cleveland

Miss Linda Gordon, FWPCA, Washington

Grover Cook

Mr. George Harlow, FWPCA, Detroit

Mr. Paul Olynyk, Cleveland State University

Mr. Russell Brant, Ohio Department of Natural
Resources, Columbus

Mr. C. Ray Ownbey, FWPCA, Chicago

The committee also wishes to thank others who were unable to attend meetings but supplied information, especially Dr. Jacob Verduin, Eastern Illinois University, Mr. David Wagner, FWPCA, Chicago, Dr. N. Wilson Britt, Ohio State University, and Mr. Harold Hall, FWPCA, Chicago.

This report to the conferees will discuss the several aspects of the Lake Erie nutrient problems by presenting the views of the experts who counselled the committee. It should be stated that there was not complete agreement among the consultants as to certain problems, particularly in regard to the changes in the fishery. It is, however, the concensus of everyone that an action program is needed to reduce nutrient inputs to Lake Erie. Hopefully, this report will add impetus to a program that will prevent further deterioration of the Lake by emphasizing immediate needs.

Grover Cook

The mission assigned the Technical Committee on nutrients was far-reaching and included areas which have not yet been fully explored. However, the committee has gained much information and data useful in achieving the goals set forth by the conferees. Through the counsel or specialists and committee deliberations the following conclusions were reached:

"(1) Determine the situation, past and present, in Lake Erie with regard to nutrient levels and the related consequences."

Recent changes were reported by specialists in different fields; namely, water chemistry, physical characteristics, algae, bottom-dwelling animals, and fishes.

Chemistry. Records from many sources over the past fifty years show a rise in chlorides from 8 milligrams per liter (mg/l) to 26 mg/l, and a rise in sulfates from 13 mg/l to 23 mg/l. Good long-term records for phosphorus are not available, but recent information indicates there has been a substantial increase in phosphorus inputs and a significant increase in concentration in the Lake.

During summer thermal stratification dissolved oxygen is depleted in the bottom waters of a large area in the Central basin. This was first reported in 1929 and has been observed many times since. However, the DO now appears to reach zero, and the area where depletion occurs has widened. This DO deficit is caused largely by organic decomposition. (A theoretical relationship between phosphorus inputs and DO depletion is attached as Appendix B.) It concludes that the oxygen deficit observed in the Central basin is caused predominantly by decay of organic carbon produced through biological processes.

Physical Conditions. Records of Lake levels have been kept for over a hundred years and fluctuations of several feet are well known. When the Lake is high, shore erosion occurs and some scientists believe this has contributed to nutrient increases in the Lake. When Lake levels are low, as in the recent past, a larger shoal area is affected by sunlight and a larger crop of Cladophora (attached algae) has been observed.

Lake currents are mostly the product of winds. The Federal Water Pollution Control Administration has measured currents near the Lake bottom with velocities as high as 2.0 feet per second. A strong wind will induce thorough mixing more than 30 feet deep. Strong winds also produce an oscillation of the thermocline that results in mixing of the bottom waters, but without intermixing of the upper and lower water layers. This lack of intermixing is significant in that the oxygen rich water of the upper layer (epilimnion) does not replenish the depleted oxygen supply in the lower layer (hypolimnion), and oxygen demanding material and nutrients do not leave the bottom waters during periods of thermal stratification.

Another physical characteristic that may bear upon the overall problem is water temperature. Records show that there has been a rise of 2°F since 1936. Air temperature, which has also risen, is probably the major causative factor.

It is concluded that the three physical phenomena discussed above may be related to excessive algal growths, but the contribution of each would be difficult to determine.

Algae. Both the microscopic suspended algae called phytoplankton, or planktonic algae, and the filamentous algae that grow attached to any hard subsurface are responsible for nuisance conditions in Lake Erie. Of the two kinds of algae, Cladophora have been troublesome for a longer time. The beaches on Kelleys Island have been littered by Cladophora for perhaps 30 years.

Chemical control has not been too successful because periods of calm are needed and chemicals work best when applied during a rather short span in the early part of the season. Also, the expense is very high if applied in a large area. It is estimated that Lake Erie has at least 400 square miles where the subsurface is suitable for *Cladophora* growth.

Lake-wide information on phytoplankton is rather sparse. However, there are good data on samples taken in Cleveland since 1929, and in the South Bass Island area over the past 30 years. The kinds and number have changed dramatically. In 1929 the diatoms *Fragillaria*, *Asterionella*, and others that are common in Lakes Superior, Huron, and Michigan were predominant. Today the diatoms *Stephanodiscus* and *Cyclotella*, which are typical of enriched lakes are the more abundant kinds. In the past three years the Federal Water Pollution Control Administration has on occasion found the highly undesirable blue-green algae appearing in dense "blooms." These are typical of eutrophic lakes and are rare in lakes like Superior and Huron. If nothing is done to minimize the conditions that promote blue-green algae the periodicity of blooms will increase.

*Bottom-dwelling Animals*. Prior to 1953 burrowing mayflies were by far the predominant bottom-dwelling animals in the Western basin. In September 1953 that Lake area became thermally stratified and dissolved oxygen was depleted in the lower layer of water. A catastrophic die-off of mayflies occurred. Although smaller populations were found in 1954 the overall distribution of these important fish food organisms declined year by year, and by 1959 only a few could be found. Today the small worms, sometimes called sludgeworms, and midge larvae are predominant.

It is generally believed that the prime cause of the decline of mayflies was low DO, but other factors may have contributed. In any event, conditions favorable to their growth and propagation have not existed since 1959 or earlier, and improved water quality will have to be provided before they can repopulate that part of the Lake.

Fishes. Dramatic changes have occurred in the Lake Erie fishery. Although Lake Erie is still the most productive of all of the Great Lakes, the catch is of poorer quality. The only high quality fish still abundant is the perch. Blue pike have disappeared, and walleyes, whitefish and herring are scarce. These changes are attributed to environmental changes. Desirable fish food organisms such as the burrowing mayfly and caddisfly are scarce, and the low DO that occurs in the hypolimnion of the Central basin creates an unfavorable habitat for both fish and the organisms upon which they feed. If desirable species of fish are to be restored in abundance, conditions must be made favorable for all stages of their life, from egg to adult.

> "(2) Determine the nutrient levels or concentrations which constitute interstate pollution of Lake Erie."

The committee was unable to obtain information sufficiently substantive to cope with this complex question.

> "(3) Determine the nutrient levels or concentrations which should be established as water quality objectives in various parts of Lake Erie."

The experts who met with the Committee were unwilling to state what they considered to be a suitable water quality objective for phosphates (other nutrients were not discussed quantitatively), but they did not disagree with the value used by Sawyer in his classical Madison, Wisconsin, lake studies. Sawyer stated: "When the concentrations of inorganic nitrogen and soluble phosphorus exceed 0.3 mg/l and 0.01 mg/l, respectively, prior to the algal growing season nuisance conditions can be expected."

(This report uses the term phosphate which is $PO_4$. Phosphate is approximately three times heavier than phosphorus as P, so this would be 0.03 mg/l as phosphate.) It is generally agreed that as far as these two nutrients are concerned this is the best available information.

> "(4) Determine the sources of nutrients entering Lake Erie, and the percentages originating from: detergents, other municipal wastes, industrial wastes, and agricultural land use."

According to Mr. Charles G. Bueltman, Technical Director, The Soap and Detergent Association, "A statistical analysis of the potential man made sources of phosphate (fertilizers, animal feeds, pharmaceuticals, etc.) indicates that detergent phosphates represent only 11-12 percent of the total." Just how much of this actually reaches streams and lakes is not known because a portion is removed by well-operated secondary sewage treatment plants.

The contribution of soluble phosphate from municipal wastes has been determined to be about 100,000 pounds per day. The total input was determined to be 174,000 pounds per day, so municipal inputs are about 60 percent of the total.

One industry contributes about 10,000 pounds per day, or about 6 percent of the total. The actual inputs from all industrial sources may be as much as 10 percent.

From the above it appears that agricultural land use may contribute as much as 30 percent of the phosphates. However, runoff from urban areas may also be significant. A Federal Water Pollution Control Administration research project in 1964 revealed that an urban test area yielded 2.5 pounds of soluble phosphate per acre per year. A city of 200 square miles could provide 220,000 pounds per year or 600 pounds per day. This could mean that the percentage of phosphorus from agricultural practices could be less than 30 percent.

"(5) Determine the nutrient balance of Lake Erie."

Information of soluble phosphate inputs and discharges were obtained from the Federal Water Pollution Control Administration program offices in Detroit, Cleveland and Rochester, New York. The following summarizes those data:

| Pounds per day | Source |
|---|---|
| 70,000 | City of Detroit STP |
| 10,000 | Industry |
| 5,000 | Canada (estimated) |
| 3,000 | Tributaries |
| 12,000 | Lake Huron discharge |
| 35,000 | Ohio Municipalities |

| Pounds per day |  | Source |
|---|---|---|
| 28,000 |  | Ohio Tributaries |
| 5,500 |  | Pa. Mun. and Tribs. |
| 4,800 |  | New York |
| 174,300 | Total |  |
| -24,000 | Discharge via Niagara River |  |
| 150,300 | Net to Lake Erie |  |

"(6) Identify the various nutrients affecting Lake Erie water quality and determine which are susceptible to control."

No further information was obtained on this subject. Some of the specialists who met with the committee mentioned nutrient substances such as nitrogen, potassium, vitamins, and carbon, but phosphorus remains as the one element most susceptible to control.

## RECOMMENDATIONS

In order to further the pollution abatement measures presented in the Summary of Conference on Pollution of Lake Erie and its Tributaries the following actions are recommended:

1. The Federal Water Pollution Control Administration is urged to expedite implementation of Recommendation 20 which concerns development by the Federal Water Pollution Control Administration of up-to-date information on phosphate removal. This information would be supplied to a task force of engineers and scientists in each State to work with sewage treatment plant operators throughout the basin to assist and consult in plant operation to maximize phosphorus removal. This group should have available the services of engineers and scientists experienced in sewage treatment plant operation for nutrient removal.
2. Development of a rapid, relatively simple determination of low concentrations of soluble and total phosphates. (It has been suggested that one existing standard procedure be used by all laboratories).
3. Sewage treatment plants routinely test for phosphates, both soluble and total.
4. Through analysis of data provided the States on phosphate reduction, determine whether maximum reduction is being effected and report findings to the conferees periodically.

5. The appropriate State and Federal agencies be urged to step up their activities relative to the restoration of a fishery comprised of desirable species, and eradication of low value species.
6. The value of 0.03 milligrams per liter for soluble phosphate be considered a goal for Lake Erie areas where this concentration is exceeded before the beginning of the algal growth season.
7. A long range surveillance program be initiated to evaluate trends in water quality, especially nutrient concentrations and algal growths.
8. Studies be initiated that will provide information on nutrient contributions from agricultural practices.

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# APPENDIX "A"

## REVISED CONCLUSIONS AND RECOMMENDATIONS OF THE CONFEREES

## CONFERENCE ON POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES

August 12, 1965

1. The waters of Lake Erie within the United States are interstate waters within the meaning of section 8 of the Federal Water Pollution Control Act. The waters of Lake Erie and its tributaries within the United States are navigable waters within the meaning of section 8 of the Federal Water Pollution Control Act.

2. Lake Erie and many of its tributaries are polluted. The main body of the Lake has deteriorated in quality at a rate many times greater than its normal aging processes, due to the inputs of wastes resulting from the activities of man.

3. Identified pollutants contributing to damages to water uses in Lake Erie are sewage and industrial wastes, oils, silts, sediment, floating solids and nutrients (phosphates and nitrates). Enrichment of Lake Erie, caused by man-made contributions of nutrient materials, is proceeding

at an alarming rate. Pollution in Lake Erie and many of its tributaries causes significant damage to recreation, commercial fishing, sport fishing, navigation, water supply, and esthetic values.

4. Eutrophication or over-fertilization of Lake Erie is of major concern. Problems are occurring along the Lake shoreline at some water intakes and throughout the Lake from algal growths stimulated by nutrients. Reduction of one or more of such nutrients will be beneficial in controlling algal growths and eutrophication.

5. Many sources of waste discharge reaching Lake Erie have inadequate waste treatment facilities. The delays in controlling this pollution are caused by the lack of such adequate facilities and the complex municipal, industrial, and biological nature of the problem.

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*Representatives of: Indiana
Michigan
New York
Ohio
Pennsylvania
U. S. Department of Health, Education and Welfare

6. Interstate pollution of Lake Erie exists. Discharges into Lake Erie and its tributaries from various sources are endangering the health or welfare of persons in States other than those in which such discharges originate. In large measure this pollution is caused by nutrients which over-fertilize the Lake. This pollution is subject to abatement under the Federal Water Pollution Control Act.

7. Municipal wastes are to be given secondary treatment or treatment of such nature as to effectuate the maximum reduction of BOD and phosphates as well as other deleterious substances.

8. Secondary treatment plants are to be so designed and operated as to maximize the removal of phosphates.

9. Disinfection of municipal waste effluents is to be practiced in a manner that will maintain coliform densities not in excess of 5,000 organisms per 100 ml. at water supply intakes, and not in excess of 1,000 organisms per 100 ml. where and when the receiving waters in proximity to the discharge point are used for recreational purposes involving bodily contact. It is recognized that bathing water quality standards are established by statute in New York State.

10. All new sewerage facilities are to be designed to prevent the necessity of bypassing untreated waters.

11. Combined storm and sanitary sewers are to be prohibited in all newly developed urban areas, and eliminated in existing areas wherever feasible. Existing combined systems are to be patrolled and flow-regulating structures adjusted to convey the maximum practicable amount of combined flows to and through treatment plants.

12. Programs are to be developed to prevent accidental spills of waste materials to Lake Erie and its tributaries. In-plant surveys with the purpose of preventing accidents are recommended.

13. Unusual increases in waste output and accidental spills are to be reported immediately to the appropriate State agency.

14. Disposal of garbage, trash, and other deleterious refuse in Lake Erie or its tributaries is to be prohibited and existing dumps along river banks and shores of the Lake are to be removed.

15. The conferees are to meet with representatives of Federal, State, and local officials responsible for agricultural, highway, and community development programs for the purpose of supporting satisfactory programs for the control of runoff which deleteriously affects water quality in Lake Erie.

16. Industrial plants are to improve practices for the segregation and treatment of waste to effect the maximum reductions of the following:

a. Acids and alkalies

b. Oil and tarry substances

c. Phenolic compounds and organic chemicals that contribute to taste and odor problems

d. Ammonia and other nitrogenous compounds

e. Phosphorous compounds

f. Suspended material

g. Toxic and highly-colored wastes

h. Oxygen-demanding substances

i. Excessive heat

j. Foam-producing discharges

k. Other wastes which detract from recreational uses, esthetic enjoyment, or other beneficial uses of the waters.

17. The Michigan, Indiana, Ohio, Pennsylvania and New York water pollution control agencies are to undertake action to insure that industrial plants discharging wastes into the waters of Lake Erie and its tributaries within their respective jurisdictions institute programs of sampling their effluents to provide necessary information about waste outputs. Such sampling shall be conducted at such locations

and with such frequency as to yield statistically reliable values of all waste outputs and to show their variations. Analyses to be so reported are to include, where applicable: pH, oil, tarry residues, phenolics, ammonia, total nitrogen, cyanide, toxic materials, total biochemical oxygen demand, and all other substances listed in the preceding paragraph.

18. Waste results are to be reported in terms of both concentrations and load rates. Such information will be maintained in open files by the State agencies for all those having a legitimate interest in the information.

19. The U. S. Department of Health, Education, and Welfare is to establish water pollution surveillance stations at appropriate locations on Lake Erie. Surveillance of the tributaries will be the primary responsibility of the States. The Department of Health, Education, and Welfare will assist the States at such times as requested.

20. The United States Department of Health, Education, and Welfare will be responsible for developing up-to-date information and experience concerning effective phosphate removal and the control of combined sewer systems. This information will be reported to the conferees regularly.

21. Regional planning is often the most logical and economical approach toward meeting pollution problems. The water pollution control agencies of Michigan, Indiana, Ohio, Pennsylvania, and New York, and the Department of

Health, Education, and Welfare will encourage such regional planning activities.

22. Within six months after the issuance of this Summary, the State water pollution control agencies concerned are to present a schedule of remedial action to the Conferees for their consideration and evaluation.

23. The Federal Conferee recommends the following for the consideration of the State agencies:

a. Recommended municipal treatment: Completion of plans and specifications, August 1966; completion of financing, February 1967; construction started, August 1967; construction completed, January 1, 1969; chlorination of effluents, May 15, 1966; provision of stand-by and emergency equipment to prevent interruptions in operation of municipal treatment plants, August 1966; patrolling of combined sewer systems, immediately.

b. Discontinuance of garbage and trash dumping into waters: immediately.

c. Industrial waste treatment facilities: Completed and in operation by January 1, 1969.

24. Federal installations: Waste treatment facilities are to be completed and in operation by August of 1966.

25. Representatives of the U. S. Army Corps of Engineers are to meet with the Conferees, develop and put into action a program for disposal of dredged material in Lake Erie and its tributaries which will satisfactorily protect water quality. Such a program is to be developed within six months after the issuance of this Summary and effectuated as soon as possible thereafter.

26. The conferees will establish a Technical Committee as soon as possible which will evaluate water quality problems in Lake Erie relating to nutrients and make recommendations to the conferees within six months after the issuance of this Summary.

27. The conference may be reconvened on the call of the Chairman.

At the conclusion of the Cleveland session of the conference, the following was included among the conclusions and recommendations of the conference;

"Pollution of navigable waters subject to abatement under the Federal Water Pollution Control Act is occurring in the Ohio waters of Lake Erie and its tributaries.

The discharges causing and contributing to the pollution come from various municipal and industrial sources, from garbage, debris, and land runoff.

"Pollution of the Ohio waters of Lake Erie and its tributaries within the State of Ohio endangers health and welfare."

A question has been raised concerning the jurisdiction of this conference over intrastate Ohio waters. The conferees agree to present this question to the Secretary of Health, Education, and Welfare, and the Governor of Ohio for clarification and resolution.

# APPENDIX "B"

## APPENDIX B

## The Relationship of Phosphates to Oxygen Depletion

The volume of Lake Erie has been calculated to be approximately 110 cubic miles. Therefore, in Lake Erie, one part per million of any substance is equal to one billion pounds if distributed evenly throughout the lake waters.

A. According to the data in Table V-8, Part I, Lake Erie, U. S. Department of Health, Education, and Welfare, Public Health Service, Water Supply and Pollution Control Div. July 1965, known discharges of soluble phosphate via the Detroit River are:

70,000 pounds per day - City of Detroit effluent
10,000 " " " - Industry (Michigan)
5,000 " " " - Canada (Estimated municipal)
2,900 " " " - Tributaries
11,800 " " " - Lake Huron
99,700 " " " - To Lake Erie via the Detroit River

Known and estimated discharges to Lake Erie from all other sources:

35,500 pounds per day - Ohio municipalities
28,500 " " " - Ohio tributaries
5,500 " " " - Pennsylvania - municipal and tributaries.
4,800 " " " - New York municipalities
74,300 " " " - To Lake Erie

| | | |
|---|---|---|
| 174,000 | pounds per day - | Total known discharge of soluble phosphates into Lake Erie |
| 24,000 | " " " - | Discharge of soluble phosphates from Lake Erie via the Niagara River |
| 150,000 | " " " - | Net daily discharge of soluble phosphates to Lake Erie |

B. A net daily soluble phosphates accumulation of 150,000 pounds x 365 days = 55 million pounds per year, which means that the lake, during the process of photosynthesis, has 55 million pounds of soluble phosphate ($PO_4$) per year and can convert this to organic matter which would remove the $PO_4$ and deposit it in the lake.

Since 3 pounds of $PO_4$ can generate 100 pounds of organic carbon, 55 million pounds of $PO_4$ could produce 1.8 billion pounds of organic carbon.

This carbon, upon ultimate decay to carbon dioxide ($CO_2$) would utilize 2.68 times its weight of oxygen (plus the oxygen needed to oxidize associated hydrogen) or a minimum of 1.8 billion x 2.68 = 4.9 billion pounds of oxygen consumed.

We know (from observations in the central basin) that at times there exists an oxygen deficit of at least (1740 pounds per square mile per foot x 2600 square miles x 10 feet average depth x 6 parts per million oxygen deficit) = 270 million pounds.

We also know from Table (1) - Part I, Lake Erie (if the data were converted to pounds of biochemical oxygen demand (BOD) discharged) that the Lake Erie basin receives 182 million pounds of BOD annually.

We therefore conclude that:

(1) The potential oxygen demand that would be generated through productivity of organic carbon is about 4.9 billion ÷ 182 million = 27 times the annual load of BOD now discharged to the Lake Erie basin, and probably much higher than that discharged directly to Lake Erie.

(2) The oxygen deficit found in the central basin in 1964 was 270 million ÷ 182 million = 1.5 times greater than the annual load of BOD now discharged.

(3) That the oxygen deficit observed in the central basin is caused predominantly by the decay of organic carbon produced through biological processes.

Known (or controllable) soluble phosphate ($PO_4$) inputs to Lake Erie are:

| Source | Soluble Phosphate input (Pounds per day) | Possible soluble phosphate input reductions which could be achieved by operating secondary treatment plants for maximum nutrient removal (pounds per day) |
|---|---|---|
| Detroit | 70,000 | 65% reduction or 45,500 |
| Industry | 10,000 | 80% " " 8,000 |
| Ohio cities | 35,500 | 50% " " 17,500 |
| Pa. cities | 2,600 | 50% " " 1,300 |
| N. Y. cities | 4,800 | - |
| Totals | 122,900 | 72,300 |

Estimated total annual soluble phosphate removal = 72,300 pounds per day x 365 days = 26.5 million pounds per year.

If this reduction can be achieved through improved secondary treatment, (26.5 ÷ 55)=48% of the soluble phosphate that is now being metabolized by the lake would be removed.

On this basis it is concluded that such a reduction in soluble phosphate ($PO_4$) inputs should result in a marked reduction in lake organic carbon productivity and a corresponding improvement in the oxygen levels below the thermocline of the central basin of Lake Erie.

SECRETARY UDALL: Are there any questions by the conferees or comments with regard to the presentations of Mr. Poston and Mr. Cook?

(No response.)

SECRETARY UDALL: If not, we thank them both for some very precise presentations.

I think I am particularly impressed with the work of the Technical Committee, and if we can get organized in terms of the technicians and water experts understanding each other and getting common procedures and common standards set, then it seems to me that we are organized and we are heading in the right direction.

MR. OEMING: Mr. Secretary, may I make a comment, please?

SECRETARY UDALL: Yes, indeed.

MR. OEMING: May I ask: What is the disposition of this report? Is this to be considered by the conferees after this conference, or how would you like to have it handled? I think it makes a difference on what we decide.

Is it your feeling that this should now be considered by the conferees as being responsive as far as they are concerned?

SECRETARY UDALL: Well, I would be interested in whether they consider this an interim report, or whether they would like to have us evaluate it, or pass upon it at this time.

What is your view, Mr. Cook?

MR. COOK: It is a little difficult for me to say without the committee members here. I wouldn't want to speak for all of them.

Several have indicated that they prefer to call it a preliminary report, or interim report.

SECRETARY UDALL: Are there still unresolved issues?

MR. COOK: Yes, sir, there are.

SECRETARY UDALL: I would think then that we ought to consider this an interim report, and ask them to put it in final form so that it can be considered later.

MR. OEMING: I think that is my primary concern.

SECRETARY UDALL: That's fine.

MR. OEMING: Surely.

SECRETARY UDALL: All right. Let us consider this an interim report then.

MR. LYON: Mr. Secretary, is this the time when we can comment on this report?

SECRETARY UDALL: Yes. I think any comments that are pertinent would be appropriate.

MR. LYON: Let me first of all commend Mr. Grover

Cook for doing an outstanding job in conducting this committee.

I think they brought to the committee a number of top experts from across the country to help the deliberations of the committee.

As you have already indicated, this should indeed only be considered an interim report, simply because there is a great deal of additional information that is needed that will have to be resolved by way of research and development before we will know exactly what nutrients are the critical ones.

We think phosphates are the most critical ones. We in Pennsylvania are concerned naturally about the pollution of Lake Erie. We have an important recreational resource there, as you know, Mr. Secretary, at the present time, but I think we are also concerned about the fact that this committee really needs to be backed up with a great deal more research than is now going on in the Federal establishment. I hope your Department will lend support towards that effort.

I know such efforts have already been initiated, as Mr. Poston indicated, but this we consider very important, simply because there are so many unanswered questions.

We all, I think, want the committee to go on.

They are going to have to be backed up by a massive research effort. Certainly we want to go ahead and abate pollution, as we have done in Pennsylvania, and as the other States are doing, and this will help the lake.

However, I don't think we have all the answers yet. We need a lot more answers.

SECRETARY UDALL: Well, I would certainly agree with you that the phosphate problem is one of the most serious unanswered questions that we have.

I think the convening of this conference is an indication of the priority that we give to this lake. We are confident that the new legislation that is going to be passed will give us additional monies.

I would certainly agree that there are many areas of research that were covered by this report that deserve to be strengthened. I think I can assure you that we will do the very best we can in this field.

MR. POSTON: Mr. Chairman, I feel very confident in this matter of phosphate removal. I think that this technical committee has served very well in carrying out our recommendation, or the conferees' recommendation, that the Administration keep the States informed of the latest information on phosphate removal. We have brought in experts not only within our own agency, but experts from around the country who have the very latest information on phosphate removal. We have been able to pass this on through this medium.

I think this committee can serve in this capacity in the future. We have studies going on, and have had studies going on, in San Antonio, and we hope to release very soon a research report on removal of phosphates.

We are very optimistic and confident that we can remove phosphates from all of these municipal and industrial wastes, and it isn't going to be the job or the tremendous expense that some people have felt it may be.

SECRETARY UDALL: Well, does the San Antonio experiment indicate that there may be a new process of phosphate removal that represents a new breakthrough of sorts?

MR. POSTON: Essentially it is an operating phenomenon with the increased solids, increased amount of air and rapid removal of solids as it gets into the final settling tank, as a procedure for removing this.

Now, this can be done in some of the existing plants as they are already constructed, as it was found in San Antonio, where, with three plants, two of them had been removing practically no phosphates, the one plant was doing an 80 to 90% job, and then, by changes in these two plants which were receiving the same kind of sewage and located on the same grounds, they have been able to step up that removal to 80 or 90%.

SECRETARY UDALL: In other words, instead of having to go to additional facilities and tertiary treatment, we may be able to accomplish this through added techniques with existing equipment?

MR. POSTON: That is right.

SECRETARY UDALL: I think this is the sort of thing that indicates we are reaping the fruits of earlier investment in research.

I was telling Mayor Locher this morning about one project that we made a grant on a month ago, that I think would be of interest to most of the municipal people here.

One of the big, tough problems that we have in this country, and the most expensive problem, really, is the problem of separation of storm and sanitary sewers -- a problem that most of our cities have.

We made a grant of nearly $1 million to St. Paul-Minneapolis, which they will match, to carry out a program designed -- and we know each system has peculiarities -- to find out whether in terms of using existing or potential reservoir capacities or managing sanitary sewer systems on a computer basis, we cannot hold back or prevent the normal process of overflowing and bypassing. It may be that a computer system can direct the holding of discharges in reservoirs and direct the utilization of other unused capacity temporarily to achieve the sort of control that management has over electric power systems. We hope that such a computerized system can achieve perhaps as high as 80 percent to 95 percent control in terms of what happens normally when a storm occurs.

Now, if we can do this, we may have achieved a tremendous shortcut, whereby we can at least achieve in this interim period an 85 to 90 percent goal in terms of preventing raw sewage from entering our watercourses and our lakes at a very small cost, as compared with the enormous cost of actual physical separation.

We do not know what the results will be of this, but this is the type of project that we are very excited by, and we say to all of the cities if you have one equally exciting or promising, just lay it on our door and maybe something favorable will happen.

MR. QUIGLEY: Mr. Secretary, I might note for the record the City of Detroit has come in with a somewhat comparable proposal that we now have under consideration. The only difference is basically that Detroit is more modest in its expectation. I think they are talking about perhaps a 30 to 35 percent reduction.

However, even this helps bring the problem down to size, where we can maybe put a saddle on it and ride it.

SECRETARY UDALL: Let's move right ahead to the first of our State reports.

We will ask the spokesman, at this point, for the State of Michigan, to make its report.

## STATEMENT OF LOERING F. OEMING, CONFEREE AND EXECUTIVE SECRETARY, MICHIGAN WATER RESOURCES COMMISSION

MR. OEMING: Mr. Chairman and Conferees:

I want to introduce Mr. Ralph Purdy, Chief Engineer of the Water Resources Commission, who will present the statement on behalf of the Water Pollution Control Agency in Michigan.

We have a bound report to present here, and I will pass this out to the conferees. There are extra copies available after this conference.

## STATEMENT OF RALPH W. PURDY, REPRESENTING THE MICHIGAN WATER RESOURCES COMMISSION

MR. PURDY: Secretary Udall, Commissioner Quigley, Mr. Stein, Conferees, Ladies and Gentlemen:

This report has been prepared for presentation to the Conferees representing the States of Indiana, Michigan, New York, Ohio, Pennsylvania and the Federal Government in the matter of pollution of Lake Erie and its tributaries. It sets forth remedial action that the State of Michigan Water Resources Commission has taken to abate pollution and to achieve and preserve a water quality in the Michigan waters of Lake Erie and its tributaries consistent with the requirements of both State and Federal law.

By letter of November 12, 1965, to the Michigan Water Resources Commission, John W. Gardner, the Secretary of Health, Education, and Welfare, transmitted a summary of two sessions of a conference on the pollution of interstate and Ohio intrastate waters of Lake Erie and its tributaries held August 3-5, 1965, in Cleveland, Ohio, and August 10-12, 1965, in Buffalo, New York, under the provisions of Section 8 of the Federal Water Pollution Control Act. One of the conclusions was that the State water pollution control agencies concerned present to the Conferees, within six months after the issuance of the summary, a schedule of remedial action for their consideration and evaluation. The Michigan Water Resources Commission had on August 3, 1965, received from Under Secretary Wilbur J. Cohen a comparable but more specific conclusion growing out of a conference on the pollution of the navigable waters of the Detroit River and Lake Erie within the State of Michigan held June 15-18, 1965, in Detroit, Michigan. The No. 5 recommendation of that conference states:

> "The Report on Pollution of the Detroit River and the Michigan waters of Lake Erie and their tributaries, prepared by the U. S. Department of Health, Education, and Welfare, dated April 1965, will be submitted to the Michigan Water Resources Commission for implementation under State and local law. Action taken by the Michigan Water Resources Commission will be reported to the Conferees at six-month intervals at public meetings to be called by the Chairman of the Conference. The Conferees expect that a time schedule for the control of pollution in the area covered by the Conference will be established by the Michigan Water Resources Commission regarding all sources of pollution within one year from the date of the

issuance of this summary."

Promptly upon receipt of the Detroit conference summary, the Water Resources Commission initiated a fast-moving program of remedial action, the details of which are included in the report presented at the August 3-5, 1965, conference in Cleveland. A brief resumé of the Commission's action program is presented as introductory to the discussion of the subsequent proceedings and current status.

The Michigan Water Resources Commission on June 24, 1965, requested that the governmental units and the industries involved appear for conferences to discuss the recommendations in the Detroit River-Lake Erie Federal Report and to explore and identify the issues as the basis for a determination of further action; that the Commission staff develop water quality goals to be sought in the Detroit River and Michigan waters of Lake Erie and that the following procedure and program be pursued:

1. July 29, 1965. Initial Commission approval of staff recommendations for water quality goals to be sought in the Detroit River and Michigan waters of Lake Erie.
2. August 25-26, 1965. Public conference with

interested parties and final approval of water quality goals.

3. September 29-30 and October 1, 1965. Conference with municipalities and industries in the Detroit River area to discuss the specific recommendations in the Federal Report pertaining to each and to explore and identify the areas of disagreement.
4. November 4, 1965. Conference with municipalities and industries in the Monroe-Lake Erie area to discuss the specific recommendations in the Federal Report pertaining to each and to explore and identify the areas of disagreement.
5. December 15, 1965. Invoke the statutory procedures or other appropriate action disclosed by the preceding conferences to be required to establish programs and dates for abatement of pollution determined to be unlawful under State statutes.

The interstate Lake Erie recommendations contained in the November 12, 1965, summary were presented to the Michigan Water Resources Commission at its December 1965 meeting and the members were of the opinion that the program already established constituted the type and extent of action which would lead to attainment of the objectives emerging from both conferences.

Now what has actually occurred? On July 29, 1965, the Michigan Water Resources Commission received from its staff proposed water quality goals to be sought in the Detroit River and Michigan waters of Lake Erie. The Commission accepted the staff recommendations as tentative goals for presentation at a conference which was held August 25, 1965, in Detroit. Representatives of governmental units, industries and other interested parties were present. Comments on the proposed goals were made by representatives of twelve interested groups. On August 26, 1965, the Commission considered the statements presented at the conference and comments thereon by staff. The proposed water quality goals were amended and adopted and they are shown in the report in Appendix A in their entirety. The goals as adopted are intended to protect and enhance present and future uses of the Detroit River and Michigan waters of Lake Erie.

Attention is invited in particular to the water quality goals for Lake Erie at a location identified as a line extending due east and west through the Detroit River light to the international boundary near the debouchment of the Detroit River and Lake Erie.

Coliform (total organisms/100 ml)....Mean density of
less than 1,000. (Determination
to be made at later date on
maximums).

Dissolved oxygen (mg/l)......Minimum 6.0.
Daily average, greater than 7.0.

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Phenols ($\mu g/l$).......Maximum 5.0
Average, 2.0.

Oils and greases.....No visible film of oil or globs of grease.

Suspended and settleable solids...Limited to the extent necessary to prevent the formation of deposits of either industrial or municipal waste origin.

Chlorides (mg/l) as Cl...Limited to present levels and reduced where feasible.

Iron (mg/l) as Fe....Less than 0.3.

Ammonia (mg/l) as $NH_3$-N... Less than 0.2.

Phosphates (soluble mg/l) as P...Limited to the extent necessary to prevent stimulation of nuisance growths of algae and weeds in the Detroit River and Lake Erie. On the basis of the best information

| | |
|---|---|
| | available to the Commission at this time this limitation would be in the range of less than 0.015 mg/1 of soluble phosphates expressed as phosphorus. |
| Cyanide (mg/1) as CN... | None detectable. |
| pH.................. | 7.0 to 8.5. |
| Color and turbidity.. | Not offensive in appearance or otherwise unattractive as the result of wastes of industrial or municipal origin. |
| Dissolved organics... | Limited to the extent necessary to prevent interference with the use of the waters as a raw water source for potable use where applicable or which will not produce a detectable off flavor in the flesh of fish or the development of fungi or other growths as the result of industrial or municipal waste effluent. |

R. W. Purdy

Goals were also adopted for the Raisin River, which is tributary to Lake Erie. These are also shown in Appendix A.

The September and October conferences were held as scheduled. Interested parties from the Detroit area (shown in Appendix B) and the Monroe area (shown in Appendix C) were present to discuss the specific Federal recommendations for effluent restrictions pertaining to each and Michigan Water Resources Commission staff recommendations for a time schedule to implement the Federal recommendations. Areas of disagreement were identified; however, on the whole, there were many areas of agreement and it was evident that Michigan municipal units of government and industries were ready to assume their obligation to abate pollution of the Detroit River and Michigan waters of Lake Erie.

At its December 15, 1965, meeting, the Michigan Water Resources Commission received from its staff proposed effluent restrictions and time schedules for performance of steps to be taken by each of the industries and governmental units to abate their respective contributions to the pollution of the Detroit River and Michigan waters of Lake Erie. The effluent restrictions recommended were based upon the desired water quality to be obtained in the receiving waters as established by the goals previously adopted. After lengthy discussion, the meeting was recessed until the afternoon of January 6, 1966, so that the Commission members could have additional time for consideration of the staff recommendations. The recommendations were reviewed further at the Commission meeting on January 6, 1966. With minor modifications, they were approved by the Commission for incorporation into Stipulations or Notices of Determination and Hearing to each governmental unit and industry involved -- the Stipulations to afford opportunity for voluntary compliance, and the Notices to initiate statutory enforcement procedures for abatement in the cases where such agreement could not be consummated. The Commission directed that the Stipulations or Notices in lieu thereof be presented for consideration at its March 1966 meeting. It is gratifying to report that all of the governmental units and all but one industry comprising thirty-five waste disposing entities have stipulated in formally executed documents to meet the time schedules and effluent requirements established by the Commission. The statutory procedure of Notice of Determination and Hearing has been initiated against the one industry that failed to accept the terms of the Stipulation presented to it. The initial phase of the statutory hearing was held April 28, 1966. The company took issue with several of the terms of the proposed Order contained in the Notice (Appendix D) and the proceedings were referred to a hearing commissioner for the taking of testimony and evidence and the preparation of a record and proposal for a decision including findings of fact and conclusion of law. A date for a continuation of the hearing will be set by the hearing commissioner in the very near future.

SECRETARY UDALL: I wonder if I might interrupt at this point, because I am going to favor, as the Cabinet Officer responsible nationally for water pollution, a rather brutally frank approach to the problem.

I think we ought to have the name for the record here today of this company.

MR. PURDY: Well, the complete Notice of Determination and Hearing is shown in Appendix D in the report. It is the proceedings against the Scott Paper Company, a Pennsylvania corporation, for abatement of pollution of the Rouge River.

SECRETARY UDALL: Well, was this company asked to assume burdens or obligations that other similar industries in the region are not asked to assume?

MR. PURDY: They were asked to reduce their suspended solids down to the same level as other industries that have a suspended solids problem.

They have a biochemical oxygen demand problem and they were asked to reduce their biochemical oxygen demand load by the same percentage as others that have the same sort of problem -- for example, the municipalities.

SECRETARY UDALL: Well, I don't want to indicate that I am attempting to pass judgment on this particular case at this time. Indeed, it is before your Commission under your regular proceedings. I assume it will move forward. However, we do not have in my Department, nor does the Federal Water Pollution Control Administration have, all of the enforcement powers that we would like to have. There are some that I suspect we would like to have that Congress won't give us anyway, but there is one power that we do have, and I propose that henceforth we use it, Commissioner Quigley, and use it effectively wherever we can. This is the power of what has been called pitiless publicity.

I think, acting in a completely judicious way, where we can, that industries in this country who will not cooperate with the programs that the States or cities put forward, or, for my part, municipalities that do not have good and valid reasons for not voting bond issues and will vote down bond issues, we ought to consider seriously in the Department before the year is out, again judiciously weighing it, having a list that the Secretary of the Interior will maintain of filthy American industries and filthy American cities. We will simply let the Nation know who these people are, what these communities are, and we take them off the list when appropriate action is taken.

(Applause.)

This, if it is done in the right way, it seems to me might help to put the focus of public opinion where it will help the most with regard to this clean-up program.

This is the reason that I asked the question. As I say, I do not want to be passing judgment on this particular company. It may be there are particular reasons why they feel that they are a special case. We will await the determination.

However, it does strike me that where you have water quality standards set and you have a whole group of industries that have different types of effluents and they all cooperate and one does not, I think a very serious burden falls on that industry to justify its conduct, or falls on a city, if it refuses to vote bond issues where other similar cities in similar States are taking action. I think we have to have ways of measuring the national effort, and we propose to do this not by way of interfering with the actions of the State people, but to help the State people carry out their own enforcement programs.

MR. OEMING: Mr. Chairman, by the same token, I believe that backing all this up, we need to initiate this enforcement procedure, and the State of Michigan intends to pursue the enforcement procedure where voluntary compliance cannot be obtained. This is the purpose of this procedure.

SECRETARY UDALL: Well, the way for the States to maintain their principal responsibilities and the way for the States to keep the Federal Government from exercising inordinate domination in this field, in my judgment, is aggressive action. I am glad to see it taking place in this instance.

MR. PURDY: The Stipulations are binding agreements -- these are the Stipulations that I have referred to with respect to the other 35 industries -- between the Michigan Water Resources Commission and the governmental unit or industry involved. Their provisions state that the

Commission is of the opinion that the waste discharges are or may become injurious to the public health, safety or welfare; or are or may become injurious to domestic, commercial, industrial, agricultural, recreational or other uses which are being made of such waters; or are or may become injurious to the value or utility of riparian lands; or are or may become injurious to livestock, wild animals, birds, fish, aquatic life or the growth or propagation thereof be prevented or injuriously affected; or whereby the value of fish and game is or may be destroyed or impaired. They provide for the Michigan Water Resources Commission holding in abeyance the initiation of statutory proceedings for pollution abatement of the waters of the State as prescribed in Section 7, Act 245, Public Acts of 1929, as amended, to allow for a voluntary program to be completed. Waste effluent restrictions and time schedules for performance are defined in the Stipulations as well as requirements for reporting upon the waste constituents discharged. A further provision sets forth that if there is a failure to meet timely any of the provisions of the agreement, the Michigan Water Resources Commission may, following notice to the party involved of its default of the agreement, enter a Final Order of Determination incorporating the provisions of the agreement and requiring compliance with the uncompleted terms of the agreement. Appendix E is a summary of the restrictions and time schedules contained in the Stipulations.

The Stipulations with the governmental units set a maximum effluent loading expressed in pounds per day for biochemical oxygen demanding substances, suspended solids, phenols, and soluble phosphates. They restrict the concentration of oils and greases to 15 milligrams per liter and total coliform content to 1,000 organisms per 100 ml, which is in the effluent from the waste treatment plant. The time schedule in general calls for the completion of a preliminary engineering study and basis of design for needed facilities by April 1, 1967; for final construction plans and specifications to be approved by November 1, 1968; and to finish construction and place the facilities in operation by November 1, 1970. There is some variation between the Stipulations in time scheduling of certain steps and requirements to accommodate special conditions, but in no case is the deadline for meeting the required effluent restrictions later than November 1, 1970. In fact, May 1, 1969, is the deadline for the governmental units in the Monroe area. The City of Detroit, in addition to the above requirements common to all Stipulations with governmental units, has agreed to take immediate steps to decrease, wherever possible, combined storm and sewage overflows by more effectively utilizing the storage capabilities of the sewer system and by improved operation of flow regulators and diversion devices. Also, it has agreed to make a study of methods and cost of reducing the frequency, magnitude, and polluting content of overflows of combined storm and sewage water from the city's sewer system and to submit a report thereon to the Michigan Water Resources Commission on or before April 1, 1968.

The Stipulation with industry, where applicable, set a maximum effluent loading expressed in pounds per day for oxygen-consuming substances, phenols, iron, soluble phosphates, chlorides and cyanides. They restrict the concentration of suspended solids to 50 milligrams per liter, except in the Monroe area, where the restriction is 35 milligrams per liter; oils and greases to 15 milligrams per liter; iron to 17 milligrams per liter; cyanide to 0.025 milligrams per liter; and total coliform content to 1,000 organisms per 100 ml. The schedules for meeting the required effluent restrictions vary, but in no case does the time period extend beyond November 1, 1969, and, in some, calls for compliance by April 1, 1967.

The Michigan legislature gave recognition to the new responsibilities imposed by Federal and State legislation relative to conducting industry and municipal visitation programs, stream evaluation programs and comprehensive stream surveys in Senate Concurrent Resolution 125 adopted October 1965. This resolution authorized the doubling of the Michigan Water Resources Commission pollution enforcement staff effective January 1, 1966. Full-time staff at the district headquarters serving the southeastern portion of Michigan has been expanded, enabling the surveillance and inspection activity to be intensified. A new, completely equipped laboratory will be in operation by July 1 of this year. Visual surveillance of the Detroit River initiated in 1960 has been further augmented by the establishment of a regular sampling program. Samples are routinely obtained and tested from outlets discharging to the Detroit River and from the river itself. Visual surveillance maintained over the past six years by means of a helicopter when ice interferes with the operation of a boat is being continued with increasing frequency. The Huron and Raisin Rivers are being and have been sampled routinely since March of 1963. The data collected from the sampling station on the Huron River are shown in Appendix F and for the Raisin River in Appendix G.

All of the communities located in the Huron and Raisin River Basins that have sewer systems provide at least primary treatment and chlorination, with 94% of the 1960 population served in the Huron Basin and 54% in the Raisin River Basin discharging to secondary treatment systems. A program for secondary treatment at Monroe has been established and will raise to 90% the population tributary to secondary treatment. With respect to maximizing phosphate removal at existing secondary plants, information is awaited from research programs now underway by the Federal Water Pollution Control Administration after which the results will be translated into required modifications or operating procedures. There are other communities located in the Basins, generally with populations of less than 1,000, that do not have sewers for collection of wastes but where raw sewage of human origin is discharged to surface ditches and drains.

The Michigan Water Resources Commission has held conferences with the involved governmental units predicated upon the 1965 amendment to the Michigan Water Pollution Control Act which makes the discharge of any raw sewage of human origin prima facie evidence of a violation of the Act. The conferences are for the purpose of ascertaining what action needs to be taken by the Commission to abate the discharges.

With respect to the Michigan portion of the Maumee River Basin, only two communities have sewer systems and both provide either secondary treatment or its equivalent. In addition, the Michigan Water Resources Commission on May 27, 1966, held its first public hearing for the establishment of water quality criteria for the Maumee River Basin interstate waters as required by Section 10 of Public Law 89-234, the Water Quality Act of 1965. The proposed criteria and program for implementation are shown in Appendix H. At the close of the hearing the criteria and program for implementation were referred by the Commission to staff for analyses of the hearing record together with the Federal Guidelines released May 11, 1966, with recommendations to be made for Commission consideration at a subsequent meeting.

Existing programs in relation to such items as disinfection of municipal waste effluents, prevention of accidental losses, prevention of bypassing of untreated waste and elimination of combined sewers are continuing and have been strengthened. Solid waste disposal is controlled by new legislation, Act 87, Public Acts of 1965. Any person, partnership, corporation, or governmental unit or agency thereof operating a refuse dump must post a performance bond and obtain a license through the Michigan Department of Public Health. Regional planning is an important approach toward meeting and correcting pollution problems. An outstanding example of this is the overall long-range general plan that was developed for sewerage and surface runoff or dainage for Macomb, Monroe, Oakland, St. Clair, Washtenaw and Wayne Counties, located in southeastern Michigan and comprising, in general, the metropolitan area surrounding the City of Detroit. This plan includes the determination of future needs, a plan showing existing and programmed systems, forecast of population and urban development, future capacity requirements, technical standards to be employed, cost estimates, and an administrative method of construction, operation and maintenance. The study was made as the result of the awareness of the need on the part of the Supervisors Inter-County Committee from the above-mentioned counties for an overall look at the sewerage problems and was financed through contributions and grants from industry, local government, and the U.S. Public Health Service.

The previous report made to the Conferees closed by stating:

> "The protection and enhancement of this great water resource (Lake Erie) must necessarily be a cooperative effort involving the Federal Government, the several states, and the waste contributing cities and industries with

each of these entities playing its appropriate role supported by an alert and responsible citizenry."

The orderly processes of investigation and administrative procedures which have been initiated and which have been pursued by the State of Michigan in the acceptance and discharge of its obligations amply demonstrate the soundness of this position. They assure the realization of the objectives of the people, through the partnership of their State and Federal governments for water quality of Lake Erie.

That is the end of my statement.

I would ask that the entire statement with the appendices be included as part of the record.

MR. QUIGLEY: That will be included as part of the record.

(The appendices referred to are as follows:)

# APPENDIX A

# WATER QUALITY GOALS

for the

MICHIGAN WATERS OF THE
DETROIT RIVER AND LAKE ERIE

Adopted By The
MICHIGAN WATER RESOURCES COMMISSION

August 26, 1965

Water Quality Goals

| | Detroit River | | | | | |
|---|---|---|---|---|---|---|
| | Dt. 30.8W to Pt. Hennepin | Michigan Waters of Fighting Island Channel Pt. Hennepin To. Dt. 3.9 | Trenton Channel Pt. Hennepin To Dt. 3.9 | Lake Erie Michigan Waters | Rouge River I-94 Bridge to Zug Island Channel | Raisin River U.S.-24 Bridge to Mouth |
| **Coliform (total organisms/100 ml.)** | **True mean density <1000 | **True mean density <1000 | **True mean density <1000 | **True mean density <1000 | **True mean density <5000 | **True mean density <5000 |
| **Dissolved oxygen (mg/l)** | Min. 6.0<br>Daily Avg. >7.0 | Min. 6.0<br>Daily Avg. >7.0 | Min. 5.0<br>Daily Avg. >6.0 | Min. 6.0<br>Daily Avg. >7.0 | Min. 3.0 | Min. 3.0 |
| **Phenols (ug/l)** | Maximum 5.0<br>Average 2.0 | Maximum 5.0<br>Average 2.0 | Maximum 5.0 | Maximum 5.0<br>Average 2.0 | Maximum 5.0 | Maximum 5.0 |
| **Oils and greases** | *1 | *1 | *1 | *1 | *1 | *1 |
| **Suspended and settleable solids** | *2 | *2 | *2 | *2 | *2 | *2 |
| **Chlorides (mg/l) as Cl** | *3 | *3 | *3 | *3 | *3 | *3 |
| **Iron (mg/l) as Fe** | < 0.3 | < 0.3 | < 0.5 | < 0.3 | < 2.0 | * N.A. |
| **Ammonia (mg/l) as $NH_3$-N** | < 0.2 | < 0.2 | < 0.5 | < 0.2 | < 1.0 | < 1.0 |
| **Phosphates (soluble mg/l) as P** | *4 | *4 | *4 | *4 | *4 | *4 |
| **Cyanide (mg/l) as CN** | None detectable | None detectable | < 0.025 | None detectable | < 0.025 | < 0.025 |
| **pH** | 7.0 to 8.5 | 7.0 to 8.5 | 6.7 to 8.5 | 7.0 to 8.5 | 6.7 to 8.5 | 6.7 to 8.5 |
| **Color and turbidity** | *5 | *5 | *5 | *5 | *5 | *5 |
| **Dissolved organics** | *6 | *6 | *6 | *6 | *6 | *6 |
| **Points of measurement** | Dt. 30.8W<br>Dt. 28.4W<br>Dt. 26.8W<br>Dt. 25.7<br>Dt. 20.6<br>Dt. 17.4W<br>Dt. 14.6W | Dt. 9.3E<br>Dt. 3.9 (8500 feet to International Boundary) | Dt. 12.0W<br>Dt. 8.7W<br>Dt. 3.9 (Shore to 8000 feet) | All Michigan waters of Lake Erie below line extending due East and West through Detroit River Light to International Boundary | I-94 Bridge<br>Schaefer Road Bridge<br>Fort St. Bridge<br>Jefferson Avenue Bridge | Monroe Street Bridge<br>I-75 Bridge<br>U.S.-24 Bridge<br>Line due North from Dundee Cement Docks |

** Determination to be made at later date on maximums.
* N.A. - Not applicable.
*1 No visible film of oil or globs of grease.
*2 Limited to the extent necessary to prevent the formation of deposits of either industrial or municipal waste origin.
*3 Limited to present levels and reduced where feasible.
*4 Limited to the extent necessary to prevent stimulation of nuisance growths of algae and weeds in the Detroit River and Lake Erie. On the basis of the best information available to the Commission at this time this limitation would be in the range of less than 0.015 mg/l of soluble phosphates expressed as phosphorus.
*5 Not offensive in appearance or otherwise unattractive as the result of wastes of industrial or municipal origin.
*6 Limited to the extent necessary to prevent interference with the use of the waters as a raw water source for potable use where applicable or which will not produce a detectable off flavor in the flesh of fish or the development of fungi or other growths as the result of industrial or municipal waste effluent.

# WATER USES TO BE IMPROVED AND PROTECTED

## Detroit River

### Dt 30.8W to Pt. Hennepin

Commercial shipping

Sport fishing

Waterfowl

Recreational boating

Swimming

Water skiing

Marinas

Raw water source for potable use

Industrial water source

- Process uses
- Cooling and condensing uses

Esthetics

Thermoelectric power plant condensing water

## Michigan Waters of Fighting Island Channel, Pt. Hennepin to Dt. 3.9

Commercial shipping

Sport fishing

Waterfowl

Recreational boating

- Swimming
- Water skiing
- Esthetics

Trenton Channel, Pt. Hennepin to Dt 3.9

- Commercial shipping
- Sport fishing
- Waterfowl
- Recreational boating
- Swimming
- Water skiing
- Marinas
- Industrial water uses
  - Process water
  - Cooling and condensing water
- Esthetics

Lake Erie

Michigan Waters

- Commercial shipping
- Sport fishing
- Commercial fishing
- Waterfowl
- Recreational boating

- Swimming
- Water skiing
- Marinas
- Raw water source for potable use
- Industrial water uses
    - Process water
    - Cooling and condensing water
- Esthetics
- Thermoelectric or thermonuclear power plant condensing water

Rouge River

I-94 Bridge to Zug Island Channel

- Commercial shipping (Limited to designated channel)
- Waterfowl
- Recreational boating
- Industrial water uses
    - Process water
    - Cooling water

Raisin River

U. S. 24 Bridge to Mouth

- Commercial shipping (Limited to designated channel)
- Waterfowl

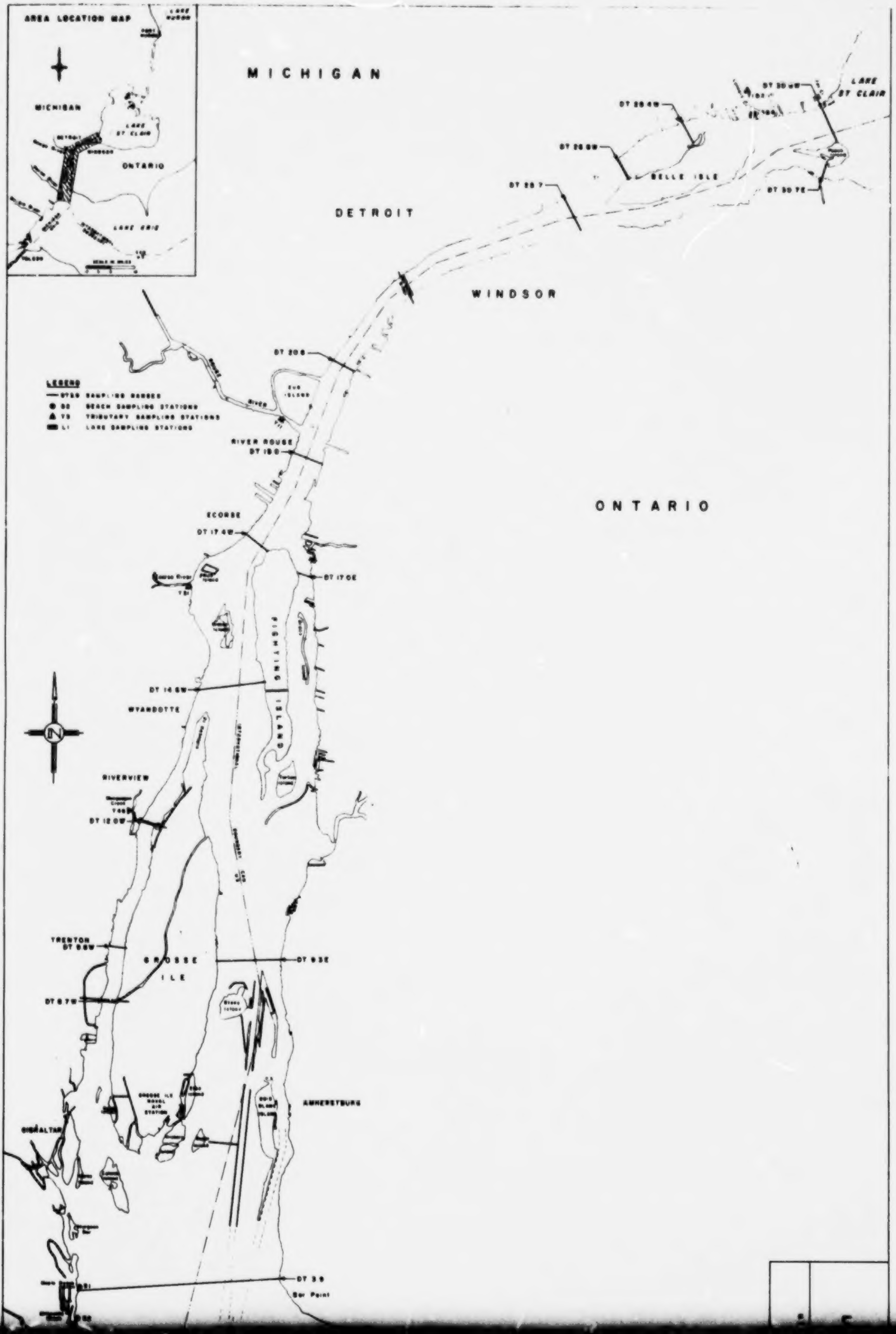
Recreational boating

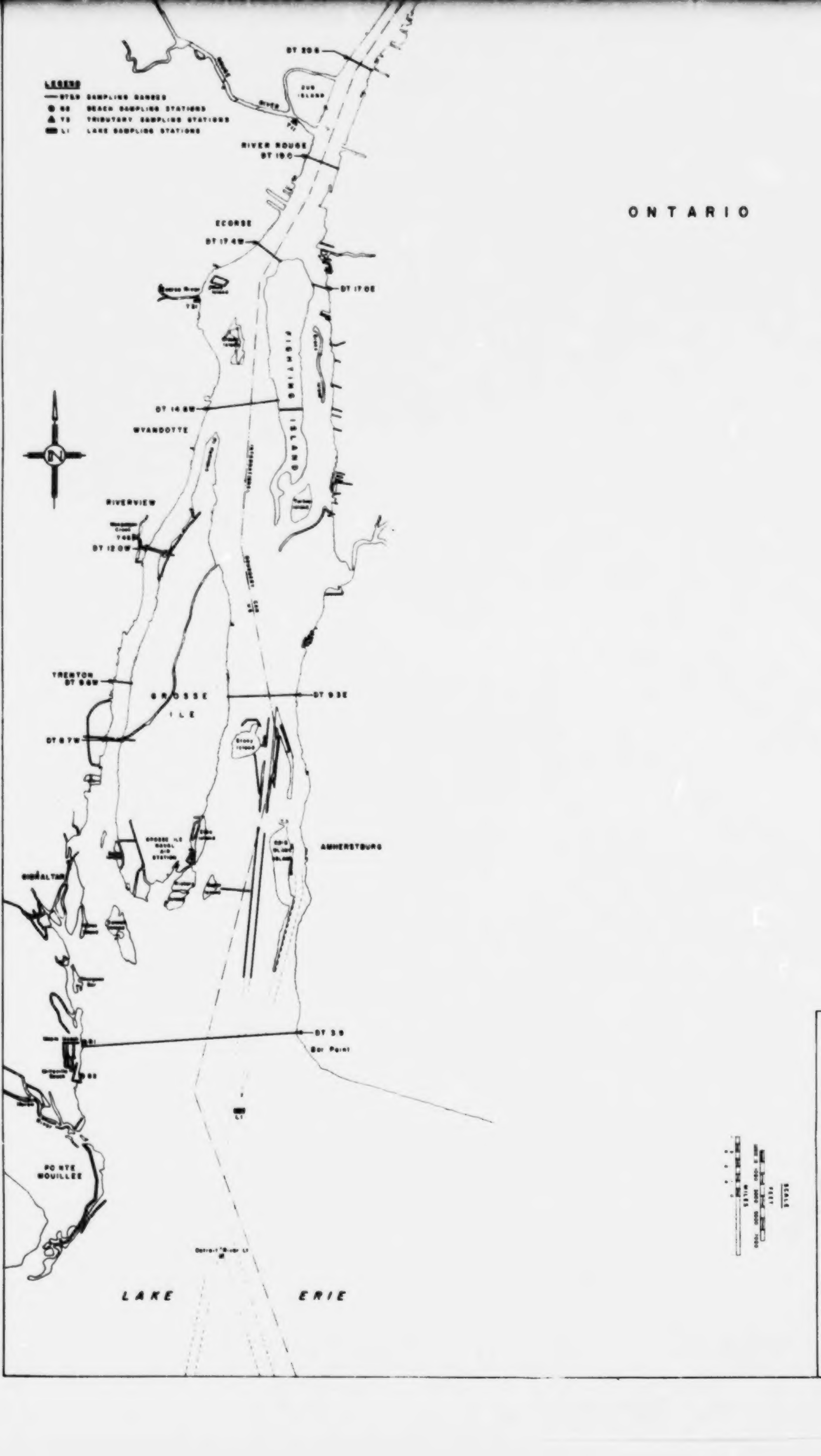
Industrial water uses

    Process water

    Cooling water

Esthetics


AREA LOCATION MAP
LAKE HURON
MICHIGAN
LAKE ST CLAIR
DETROIT
WINDSOR
ONTARIO
LAKE ERIE
TOLEDO
SCALE IN MILES
MICHIGAN
DETROIT
WINDSOR
ONTARIO
LAKE ST CLAIR
DT 30.4W
DT 28.4W
DT 26.8W
DT 25.7
BELLE ISLE
DT 30.7E
DT 20.6
LEGEND
DT20 SAMPLING RANGES
● B2 BEACH SAMPLING STATIONS
▲ T3 TRIBUTARY SAMPLING STATIONS
▬ L1 LAKE SAMPLING STATIONS
ROUGE
RIVER
ZUG ISLAND
RIVER ROUGE
DT 19.0
ECORSE
DT 17.4W
Ecorse River
T31
DT 17.0E
FIGHTING ISLAND
DT 14.6W
WYANDOTTE
N
RIVERVIEW
T44
DT 12.0W
TRENTON
DT 9.6W
GROSSE ILE
DT 9.3E
DT 8.7W
GROSSE ILE NAVAL AIR STATION
AMHERSTBURG
GIBRALTAR
DT 3.9
Bar Point


LEGEND
DT 5.9 SAMPLING RANGES
B2 BEACH SAMPLING STATIONS
T3 TRIBUTARY SAMPLING STATIONS
L1 LAKE SAMPLING STATIONS
DT 20.6
ZUG ISLAND
Rouge River
T3
RIVER ROUGE
DT 19.0
ONTARIO
ECORSE
DT 17.4W
DT 17.0E
Ecorse River
T2
FIGHTING ISLAND
DT 14.6W
WYANDOTTE
RIVERVIEW
T4
DT 12.0W
TRENTON
DT 9.6W
GROSSE ILE
DT 9.3E
DT 8.7W
Stony Island
GROSSE ILE NAVAL AIR STATION
AMHERSTBURG
GIBRALTAR
DT 3.9
Bar Point
B1
B2
L1
PONTE MOUILLEE
Detroit River Lt
LAKE ERIE
SCALE
FEET
MILES

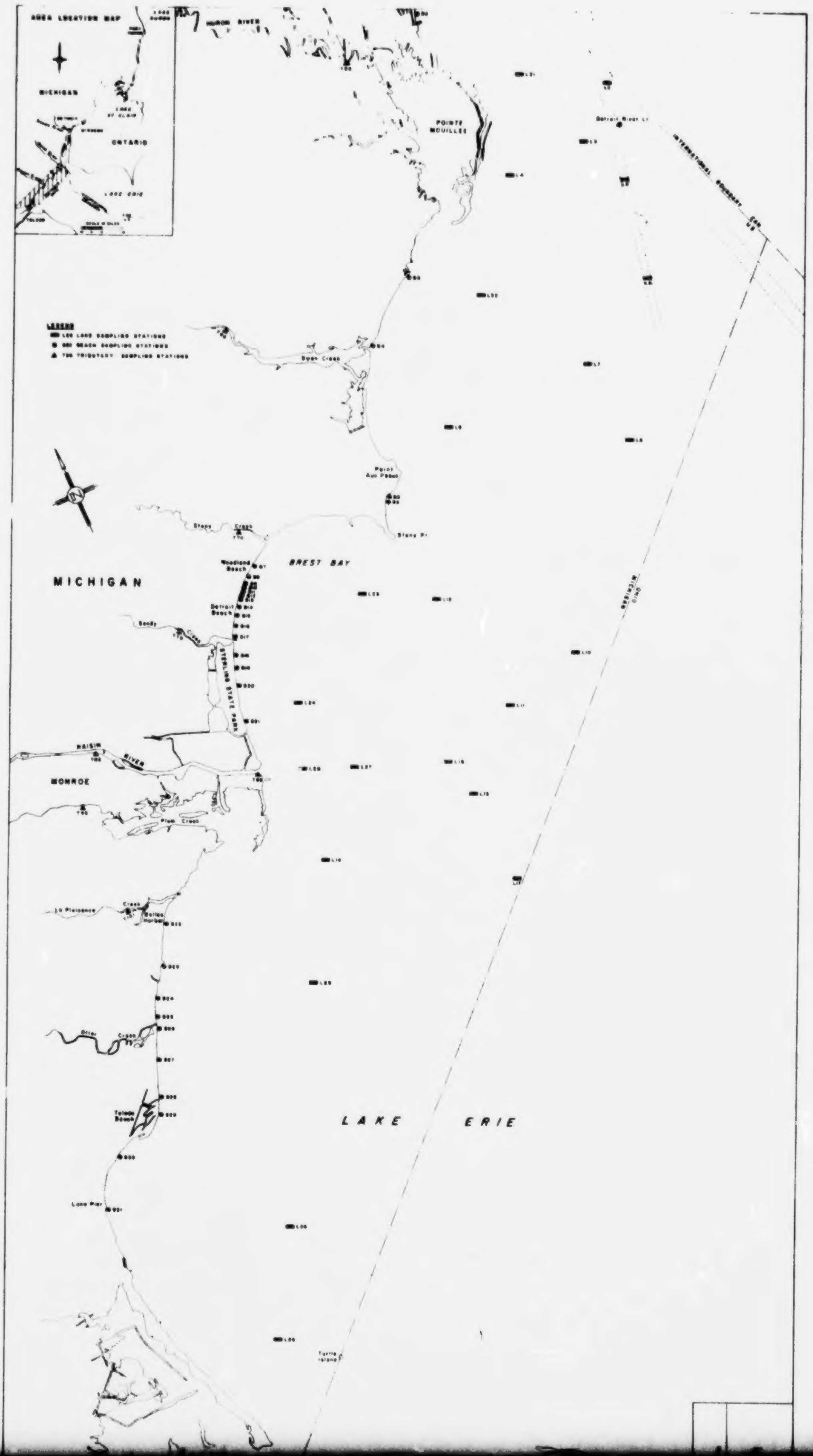
DETROIT RIVER-LAKE ERIE PROJECT

FIGURE 2-1

LOCATION OF SAMPLING STATIONS

DETROIT RIVER

U S DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
REGION V GROSSE ILE, MICHIGAN


AREA LOCATION MAP
LAKE HURON
MICHIGAN
LAKE ST CLAIR
DETROIT
WINDSOR
ONTARIO
LAKE ERIE
TOLEDO
SCALE IN MILES
LEGEND
L00 LAKE SAMPLING STATIONS
B00 BEACH SAMPLING STATIONS
T00 TRIBUTARY SAMPLING STATIONS
HURON RIVER
POINTE MOUILLEE
Detroit River Lt
INTERNATIONAL BOUNDARY
Swan Creek
Point Aux Peaux
Stony Creek
Stony Pt
Woodland Beach
BREST BAY
MICHIGAN
Detroit Beach
Sandy Creek
STERLING STATE PARK
RAISIN RIVER
MONROE
Plum Creek
La Plaisance Creek
Bolles Harbor
Otter Creek
Toledo Beach
LAKE ERIE
Luna Pier
MICHIGAN
OHIO
Turtle Island

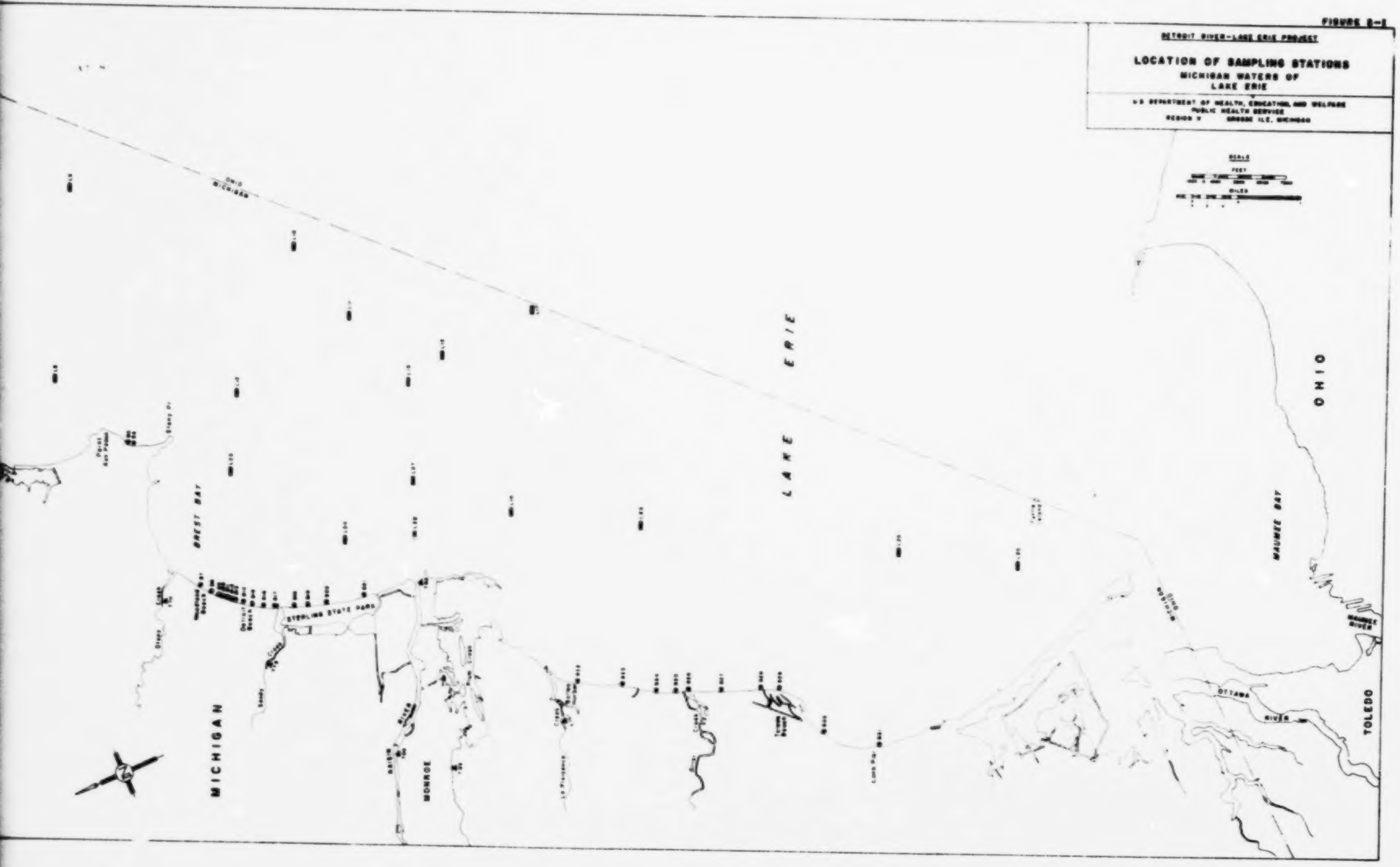

MICHIGAN
MONROE
BREST BAY
LAKE ERIE
OHIO
MAUMEE BAY
TOLEDO
STERLING STATE PARK
Point Aux Peaux
Stony Pt.
Woodland Beach
Detroit Beach
Sandy Creek
Raisin River
Plum Creek
La Plaisance Creek
Bolles Harbor
Toledo Beach
Turtle Island
Ottawa River
Maumee River
Michigan
Ohio
SCALE
FEET
MILES

FIGURE 8-1

DETROIT RIVER-LAKE ERIE PROJECT

LOCATION OF SAMPLING STATIONS
MICHIGAN WATERS OF
LAKE ERIE

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
REGION V GROSSE ILE, MICHIGAN

# APPENDIX B

## Conferences
## with
## Detroit Industries and Governmental Units
## September 29, 30
## and
## October 1, 1965

City of Detroit

Wayne County Department of Public Works

Wayne County Drain Commissioner

City of Riverview

City of Trenton

Township of Grosse Ile, Wayne County

Great Lakes Steel Corporation, Division of National Steel Corporation

Ford Motor Company

American Cement Corporation, Peerless Division

Darling and Company

Wyandotte Chemicals Corporation

Pennsalt Chemicals Corporation

McLouth Steel Corporation

Revere Copper and Brass, Incorporated

Firestone Steel Products Division, The Firestone Tire and Rubber Company

Mobil Oil Company

Monsanto Company

Allied Chemical Corporation

Scott Paper Company

E. I. duPont de Nemours, Incorporated

# APPENDIX C

## Conference
## with
## Monroe Industries and Governmental Units

November 4, 1965

City of Monroe

Village of Estral Beach

Village of South Rockwood

Monroe County Drain Commissioner

Township of Erie, Monroe County

Township of LaSalle, Monroe County

Township of Berlin, Monroe County

Township of Frenchtown, Monroe County

Township of Monroe, Monroe County

Time Container Corporation

Consolidated Packaging Corporation

Union Bag-Camp Paper Corporation

Ford Motor Company

# APPENDIX D

## STATE OF MICHIGAN

## WATER RESOURCES COMMISSION

Proceedings Against SCOTT PAPER COMPANY :
a Pennsylvania Corporation, for Abatement:
of Pollution of the ROUGE RIVER :

## NOTICE OF DETERMINATION AND HEARING

TO: SCOTT PAPER COMPANY, A PENNSYLVANIA CORPORATION,
DETROIT, MICHIGAN

YOU ARE HEREBY NOTIFIED that the Water Resources Commission, after due consideration of complaints received and of investigations made, is of the opinion and has determined that you are violating the provisions of Act 245, Public Acts of 1929, as amended, in that you have failed and are failing to control the polluting content of industrial wastes discharged by you or permitted by you to be discharged to the Rouge River from a plant owned and operated by you at Detroit, Michigan, which act creates in the Rouge River conditions contrary to the public interest. The specific violation is as follows:

1. Scott Paper Company discharges industrial wastes into the Rouge River from its Detroit plant, said wastes containing suspended solids and oxygen consuming substances.

YOU ARE FURTHER NOTIFIED that it is the opinion of the Commission that said wastes discharged by the Company are or may become injurious to the public welfare; or are or may become injurious to domestic, commercial, industrial, recreational, or other uses which are being made of such waters; or are or may become injurious to the value or utility of riparian lands; or are or may become injurious to birds, fish, aquatic life, or plants or the growth or propagation thereof be prevented or injuriously affected; or whereby the value of fish and game are or may be destroyed or impaired.

YOU ARE FURTHER NOTIFIED that to abate the pollution of Rouge River the Commission has under consideration the adoption of a Final Order of Determination requiring you to comply with the following conditions and restrictions:

1. Treat or control the industrial wastes from your manufacturing operations to the extent that when

discharged to the Rouge River they shall:

a. Not contain more than fifty (50) milligrams per liter nor add more than eighteen thousand three hundred (18,300) pounds per day of suspended solids, as a result of Company operations.

b. Not add more than thirty one thousand (31,000) pounds per day of oxygen consuming substances, as measured by the five-day biochemical oxygen demand test, as a result of the Company operations.

2. Provide facilities capable of producing the waste effluent quality specified in paragraph 1 hereof according to the following time schedule:

a. Submit construction plans and specifications for facilities to attain the limitations on suspended solids to the Chief Engineer of the Commission and obtain his approval thereof by November 1, 1966.

b. Complete construction of facilities to attain the limitations on suspended solids and place same in operation by November 1, 1967.

c. Submit preliminary engineering study and basis of design for facilities to attain limitations on oxygen consuming substances by November 1, 1966.

d. Submit construction plans and specifications for facilities to attain limitations on oxygen consuming substances to the Chief Engineer of the Commission and obtain his approval thereof by November 1, 1967.

e. Complete construction of facilities to attain the limitations on oxygen consuming substances and place same in operation by November 1, 1968.

3. Perform analyses to determine the content of the substances enumerated in paragraph 1 hereof to the extent necessary and sufficient to demonstrate compliance status and file reports of said analyses with the Chief Engineer of the Commission at the end of each month, beginning January 31, 1967.

4. Failure to meet timely any requirement of the proposed Final Order shall constitute a default of the entire Order.

YOU ARE FURTHER NOTIFIED that a hearing on the facts and the above proposed Order will be provided you and held by the Commission at 3:00 p.m., April 28, 1966, in Room 514 of the Veterans Memorial Building, Detroit, Michigan.

YOU ARE FURTHER NOTIFIED that unless the hearing discloses that testimony will be unnecessary and agreement on the facts and proposed action can be reached between the parties by stipulation, by agreed settlement, by consent Order or default, the Commission will adjourn the hearing and will refer to its Hearing Commissioner the taking of all testimony, evidence and arguments on the facts and the law relating to the above proposed Order.

YOU ARE FURTHER NOTIFIED that upon completion of the testimony, evidence and arguments and service upon you of the Hearing Commissioner's record including his proposal for a decision including findings of fact and conclusions of law, the Commission will set a date for final hearing upon the record made before the Hearing Commissioner at which time full and fair opportunity to argue and present contentions orally to the Commission will be provided in accordance with Rules 6 and 7, Commission Rules of Procedure, following which decision will be rendered by the Commission on the adoption of a Final Order of Determination for abatement of the pollution herein described.

The files and records of the Department of Conservation, Michigan Department of Public Health and Water Resources Commission pertaining to the aforesaid violation will be available for inspection prior to or at the hearing and will be presented at the statutory hearing as evidence of said violation.

This Notice was adopted at the March 31, 1966 meeting of the Commission in accordance with the provisions of Act 245, Public Acts of 1929, as amended, on motion by Mr. Gilmore, supported by Mr. Vogt and unanimously carried.

PRESENT AND VOTING:

Gerald E. Eddy, for Director of Conservation, Chairman

Lynn F. Baldwin, for Conservation Groups, Vice Chairman

John E. Vogt, for Director of Public Health

James V. Murray, for State Highway Commission

Stanley Quackenbush, for Director of Agriculture

Jim Gilmore, for Industrial Management Groups

George F. Liddle, for Municipal Groups

## APPENDIX E

### Summary of Restrictions and Time Schedules
### in
### Executed Stipulations

**CITY OF DETROIT**

| Waste Constituent | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 206,000 lbs/day |
| Suspended Solids | Maximum of 50 mg/1 and 324,000 lbs/day |
| Phenol | Maximum of 93 lbs/day |
| Total Coliform M.P.N. | Maximum of 1,000 |
| Phosphates | Minimum of 80% removal and maximum of 21,000 lbs/day |
| Oil | Maximum of 15 mg/1 |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning February 1, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | April 1, 1967 |
| Construction plans and specifications approved by | November 1, 1968 |
| Finish construction by | November 1, 1970 |

A study shall be made of the combined storm water overflow problem to determine effective methods of control and related costs and shall be submitted to the Commission by April 1, 1968.

Immediate steps shall be taken to decrease, wherever possible, combined storm water overflows by more effectively utilizing the storage capabilities of the sewer system and by proper operation of regulators and diversion devices.

## WAYNE COUNTY

| Waste Constituent | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 28,900 lbs/day |
| Suspended Solids | Maximum of 50 mg/l and 19,000 lbs/day |
| Phenol | Maximum of 10 lbs/day |
| Oil | Maximum of 15 mg/l |

| | |
|---|---|
| Total Coliform M.P.N. | Maximum of 1,000 (April-November) |
| Phosphates | Minimum of 80% removal and maximum of 3,000 lbs/day |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning February 1, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | April 1, 1967 |
| Construction plans and specifications approved by | November 1, 1968 |
| Finish construction by | November 1. 1970 |

CITY OF RIVERVIEW

Waste Constituent

| | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 920 lbs/day |
| Suspended Solids | Maximum of 50 mg/1 and 470 lbs/day |

| | |
|---|---|
| Phenol | Maximum of 0.2 lbs/day |
| Oil | Maximum of 15 mg/l |
| Total Coliform M.P.N. | Maximum of 1,000 (April-November) |
| Phosphates | Minimum of 80% removal and Maximum of 35 lbs/day |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning February 1, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | April 1, 1967 |
| Construction plans and specifications approved by | November 1, 1968 |
| Finish construction by | November 1, 1970 |

CITY OF TRENTON

Waste Constituent

| | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 1,840 lbs/day |

| | |
|---|---|
| Suspended Solids | Maximum of 50 mg/l and 935 lbs/day |
| Phenol | Maximum of 5 lbs/day |
| Oil | Maximum of 15 mg/l |
| Total Coliform M.P.N. | Maximum of 1,000 (April-November) |
| Phosphates | Minimum of 80% removal and Maximum of 138 lbs/day |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning February 1, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | April 1, 1968 |
| Construction plans and specifications approved by | November 1, 1969 |
| Finish construction by | November 1, 1970 |

## GROSSE ILE TOWNSHIP

| Waste Constituent | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 980 lbs/day |
| Suspended Solids | Maximum of 50 mg/l and<br>500 lbs/day |
| Phenol | Maximum of 1 lb/day |
| Total Coliform M.P.N. | Maximum of 1,000<br>(April-November) |
| Phosphates | Minimum of 80% removal and<br>Maximum of 20 lbs/day |
| Oil | Maximum of 15 mg/l |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning February 1, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | April 1, 1967 |
| Construction plans and specifications approved by | November 1, 1968 |
| Finish construction by | November 1, 1970 |

## GREAT LAKES STEEL CORPORATION

| Waste Constituent | |
|---|---|
| Suspended Solids (1, 2, 3) | Maximum of 50 mg/1 |
| Phenol (1) | Maximum of 180 lbs/day |
| Acid Waste pH (3) | 5.5 - 10.6 |
| Oil (1, 2, 3) | Maximum of 15 mg/1 |
| Iron (3) | Maximum of 17 mg/1 and 4,000 lbs/day |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications for waste constituent reduction, other than acid, iron, and No. 11 Ecorse plant outfall approved by | November 1, 1966 |
| Finish construction of facilities for waste constituent reduction, other than acid, iron, and No. 11 | |

| | |
|---|---|
| Ecorse plant outfall by | April 1, 1968 |
| Construction plans and specifications for acid and iron reduction approved by | December 1, 1967 |
| Finish construction of facilities for acid and iron reduction by | April 1, 1969 |
| Submit report on scale model test study on Ecorse plant No. 11 outfall by | November 1, 1966 |
| Complete modifications indicated by model test study by | April 1, 1967 |
| Conduct study of actual outfall No. 11 basin water quality | April 1-June 30, 1967 |

If study of basin water quality shows need for additional treatment facilities to meet stipulation limits;

| | |
|---|---|
| Construction plans and specifications for outfall No. 11 approved by | October 1967 |
| Finish construction of treatment facilities for No. 11 outfall by | October 1968 |

(1) Blast Furnace Division (2) Strip Mill (3) Ecorse Plant

## FORD MOTOR COMPANY (ROUGE PLANT), DEARBORN

| Waste Constituent | |
|---|---|
| Suspended Solids | Maximum of 50 mg/1 |
| Phenol | Maximum of 70 lbs/day |
| Iron | Maximum of 17 mg/1 and 2,500 lbs/day |
| Oil | Maximum of 15 mg/1 |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications for waste constituent reduction, other than iron and suspended solids approved by | October 1, 1966 |
| Finish construction of facilities for waste constituent reduction, other than iron and suspended solids | Seventeen months after approval of plans |

| | |
|---|---|
| Construction plans and specifications for iron and suspended solids reduction approved by | March 1, 1967 |
| Finish construction of facilities for iron reduction | Twenty-four months after approval of plans |
| Finish construction of facilities for removal of suspended solids | Twenty-seven months after approval of plans |

AMERICAN CEMENT CORPORATION, PEERLESS DIVISION

| Waste Constituent | |
|---|---|
| Suspended Solids | Maximum of 50 mg/l |

Analyses shall be made of the effluent waste constituent listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limit:

| | |
|---|---|
| Construction plans and specifications approved by | May 1, 1966 |
| Finish construction by | May 1, 1967 |

DARLING AND COMPANY

Waste Constituent

| | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 600 lbs/day |
| Total Coliform M.P.N. | Maximum of 1,000 |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications approved by | November 1, 1966 |
| Finish construction by | November 1, 1967 |

WYANDOTTE CHEMICALS CORPORATION

Waste Constituent

| | | |
|---|---|---|
| Suspended Solids | | Maximum of 50 mg/l |
| Oil | | Maximum of 15 mg/l - all outlets |
| Chlorides | North Plant | Maximum of 1,300,000 lbs/day |
| | South Plant | Maximum of 550,000 lbs/day |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications approved by | November 1, 1966 |
| Finish construction by | April 1, 1968 |

Continue investigating alternate methods of chloride and concentrated brine disposal with the view of reducing the discharge of these materials to the Detroit River.

## PENNSALT CHEMICALS CORPORATION

Waste Constituent

| | | |
|---|---|---|
| Suspended Solids | | Maximum of 50 mg/l |
| Chlorides | East Plant | Maximum of 500,000 lbs/day |
| | West Plant | Maximum of 8,800 lbs/day |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications approved by | November 1, 1966 |
| Finish construction by | April 1, 1968 |

Continue investigation, at the East Plant, of alternate methods of chloride and concentrated brine disposal with the view of reducing the discharge of these materials to the Detroit River.

MC LOUTH STEEL CORPORATION, TRENTON PLANT

Waste Constituent

| | |
|---|---|
| Suspended Solids | Maximum of 50 mg/l |
| Iron | Maximum of 17 mg/l and 2,500 lbs/day |
| Oil | Maximum of 15 mg/l |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications approved by | November 1, 1966 |
| Finish construction by | April 1, 1968 |

### REVERE COPPER AND BRASS, INCORPORATED

| Waste Constituent | |
|---|---|
| Suspended Solids | Maximum of 50 mg/l |
| Oil | Maximum 15 mg/l |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications approved by | November 1, 1966 |
| Finish construction by | November 1, 1967 |

FIRESTONE TIRE AND RUBBER COMPANY

| Waste Constituent | |
|---|---|
| Iron | Maximum of 17 mg/1 and 330 lbs/day |

Analyses shall be made of the effluent waste constituent listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limit:

Construction plans and specifications

| | |
|---|---|
| approved by | November 1, 1966 |
| Finish Construction by | November 1, 1967 |

### MOBIL OIL COMPANY

| Waste Constituent | |
|---|---|
| Suspended Solids | Maximum of 50 mg/1 |
| Oil | Maximum of 15 mg/1 |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications approved by | November 1, 1966 |
| Finish construction by | November 1, 1967 |

### MONSANTO CHEMICALS CORPORATION, TRENTON RESINS PLANT

| Waste Constituent | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 2,800 lbs/day |

Analyses shall be made of the effluent waste constituent listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limit:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | November 1, 1966 |
| Construction plans and specifications approved by | April 1, 1967 |
| Finish construction by | April 1, 1968 |

## MONSANTO CHEMICALS CORPORATION, INORGANIC CHEMICALS DIVISION

| Waste Constituent | |
|---|---|
| Phosphates | Maximum of 2,000 lbs/day |

Analyses shall be made of the effluent waste constituent listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limit:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | November 1, 1967 |
| Construction plans and specifications approved by | August 1968 |
| Start construction by | November 1968 |
| Finish construction by | November 1, 1969 |

Proceed immediately with presently authorized plans to segregate in-plant waste flows and reduce known phosphate discharges where possible.

ALLIED CHEMICAL CORPORATION, SOLVAY PROCESS DIVISION

| Waste Constituent | |
|---|---|
| Suspended Solids | Maximum of 50 mg/l |
| Chlorides | Maximum of 2,800,000 lbs/day |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications approved by | November 1, 1966 |
| Finish construction by | April 1, 1968 |

ALLIED CHEMICAL CORPORATION, SEMET SOLVAY DIVISION

Waste Constituent

| | |
|---|---|
| Oil | None in amounts sufficient to cause a visible film on the surface waters |

Analyses shall be made of the effluent waste constituent listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limit:

| | |
|---|---|
| Construction plans and specifications approved by | April 1, 1966 |
| Finish construction by | April 1, 1967 |

## E. I. DuPONT de NEMOURS AND COMPANY, INDUSTRIAL AND BIOCHEMICAL DIVISION

| Waste Constituent | |
|---|---|
| pH | 5.8 - 10.3 |

Analyses shall be made of the effluent waste constituent listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limit:

| | |
|---|---|
| Construction plans and specifications approved by | April 1, 1966 |
| Finish construction by | April 1, 1967 |

## TIME CONTAINER CORPORATION MONROE PAPER PRODUCTS DIVISION

| Waste Constituent | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 500 lbs/day |
| Suspended Solids | Maximum of 35 mg/l and 650 lbs/day |
| Total Coliform M.P.N. | Maximum of 1,000 (April-November) |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | January 1, 1967 |
| Construction plans and specifications approved by | January 1, 1968 |
| Finish construction by | January 1, 1969 |

CONSOLIDATED PACKAGING CORPORATION, NORTH PLANT

| Waste Constituent | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 2,400 lbs/day |
| Suspended Solids | Maximum of 35 mg/1 and 2,200 lbs/day |
| Total Coliform M.P.N. | Maximum of 1,000 (April-November) |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | January 1, 1967 |
| Construction plans and specifications approved by | January 1, 1968 |
| Finish construction by | January 1, 1969 |

CONSOLIDATED PACKAGING CORPORATION, SOUTH PLANT

| Waste Constituent | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 1,500 lbs/day |
| Suspended Solids | Maximum of 35 mg/1 and 2,100 lbs/day |
| Total Coliform M.P.N. | Maximum of 1,000 (April-November) |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | January 1, 1967 |
| Construction plans and specifications approved by | January 1, 1968 |
| Finish construction by | January 1, 1969 |

UNION BAG-CAMP CORPORATION

| Waste Constituent | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 2,500 lbs/day |
| Suspended Solids | Maximum of 35 mg/1 and 1,350 lbs/day |
| Total Coliform M.P.N. | Maximum of 1,000 (April-November) |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | January 1, 1967 |
| Construction plans and specifications approved by | January 1, 1968 |
| Finish construction by | January 1, 1969 |

FORD MOTOR COMPANY, MONROE

| Waste Constituent | |
|---|---|
| Cyanide | Maximum of 0.025 mg/1 and 25 lbs/day |
| Oil reaching dilution canal | Maximum of 15 mg/1 |
| Phosphates | Maximum of 200 lbs/day |
| Total Coliform M.P.N. | Maximum of 1,000 (April-November) |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning January 31, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Construction plans and specifications approved by | December 1, 1967 |
| Finish construction | Twenty-four months after approval of plans |

**CITY OF MONROE**

| Waste Constituent | |
|---|---|
| 5-day Biochemical Oxygen Demand | Maximum of 350 lbs/day |
| Suspended Solids | Maximum of 50 mg/l and 1,200 lbs/day |
| Phosphates | Minimum of 80% removal and Maximum of 128 lbs/day |
| Total Coliform M.P.N. | Maximum of 1,000 (April-November) |

Analyses shall be made of the effluent waste constituents listed, to the extent necessary and sufficient to demonstrate compliance status and shall be filed with the Chief Engineer at the end of each month beginning February 1, 1967.

Time schedule for construction of facilities to implement the above waste effluent criteria limits:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | May 1, 1967 |
| Construction plans and specifications approved by | May 1, 1968 |
| Finish construction by | May 1, 1969 |

The City shall accelerate plans for separating storm runoff and infiltration from the sanitary sewer system.

## CITY OF LUNA PIER

The discharge of raw and semi-treated sewage into watercourses shall be discontinued and areas of need shall be sewered to transport wastes to treatment facilities for treatment, disinfection and substantial reduction in phosphates.

Time schedule for the construction of treatment facilities to implement this recommendation:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | May 1, 1967 |
| Construction plans and specifications approved by | May 1, 1968 |
| Finish construction by | May 1, 1969 |

Perform analyses of waste constituents and submit reports to the Chief Engineer at the end of each month beginning May 1, 1969.

## VILLAGE OF ESTRAL BEACH

The discharge of raw and semi-treated sewage into watercourses shall be discontinued and areas of need shall be sewered to transport wastes to treatment facilities for treatment, disinfection and substantial reduction in phosphates.

Time schedule for the construction of treatment facilities to implement this recommendation:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | May 1, 1967 |
| Construction plans and specifications approved by | May 1, 1968 |
| Finish construction by | May 1, 1969 |

Perform analyses of waste constituents and submit reports to the Chief Engineer at the end of each month beginning May 1, 1969.

## BERLIN TOWNSHIP BOARD

The discharge of raw and semi-treated sewage into watercourses shall be discontinued and areas of need shall be sewered to transport wastes to treatment facilities for treatment, disinfection and substantial reduction in phosphates.

Time schedule for the construction of treatment facilities to implement this recommendation:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | May 1, 1967 |
| Construction plans and specifications approved by | May 1, 1968 |
| Finish construction by | May 1, 1969 |

Perform analyses of waste constituents and submit reports to the Chief Engineer at the end of each month beginning May 1, 1969.

## FRENCHTOWN TOWNSHIP BOARD

The discharge of raw and semi-treated sewage into watercourses shall be discontinued and areas of need shall be sewered to transport wastes to treatment facilities for treatment, disinfection and substantial reduction in phosphates.

Time schedule for the construction of treatment facilities to implement this recommendation:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | May 1, 1967 |
| Construction plans and specifications approved by | May 1, 1968 |
| Finish construction by | May 1, 1969 |

Perform analyses of waste constituents and submit reports to the Chief Engineer at the end of each month beginning May 1, 1969.

MONROE TOWNSHIP BOARD

The discharge of raw or semi-treated sewage into watercourses shall be discontinued and areas of need shall be sewered to transport wastes to treatment facilities for treatment, disinfection, and substantial reduction in phosphates.

Time schedule for the construction of treatment facilities to implement this recommendation:

| | |
|---|---|
| Complete preliminary engineering study and basis of design by | May 1, 1967 |
| Construction plans and specifications approved by | May 1, 1968 |
| Finish construction by | May 1, 1969 |

Perform analyses of waste constituents and submit reports to the Chief Engineer at the end of each month beginning May 1, 1969.

# APPENDIX F

## HURON RIVER
## AT
## RIVER ROAD BRIDGE
## 3.5 MILES SOUTHEAST OF ROCKWOOD

## HURON RIVER, ROCKWOOD

| Date | Temperature °C | Dissolved Oxygen | Biochemical Oxygen Demand | Chemical Oxygen Demand | pH | Suspended Solids | Vol. Suspended Solids | Dissolved Solids | Iron--Fe | Calcium--Ca | Magnesium--Mg | Sodium--Na | Potassium--K | Nitrate--$NO_3$-N | Chloride--Cl | Sulphate--$SO_4$ | Bicarbonate--$HCO_3$ | Carbonate--$CO_3$ | Phosphates--$PO_4$ | Hardness-$CaCO_3$ | Detergents--AD | Cyanide--CN | Ammonia--$NH_3$-N | Phenols | Conductance Micro MHOS | Coliforms mpn/100 ml |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-14-63 | 4 | 12.8 | 7.4 | 36 | 8.0 | 56 | 11 | 416 | .4 | 74 | 23 | 32 | 3.2 | 2.7 | 49 | 59 | 260 | 0 | 2.0 | 280 | .5 |  | 2.3 |  | 690 |  |
| 4- 4-63 | 8 | 10.2 | 5.6 | 33 | 8.0 | 104 | 8 |  |  |  |  |  |  | 4.8 | 28 |  |  |  | .4 |  | .2 |  | .9 |  | 500 |  |
| 4-19-63 | 16 | 12.2 | 10.8 | 50 | 8.7 | 68 | 22 |  |  |  |  |  |  | 0 | 38 |  |  |  | 1.3 |  | .3 |  | .0 |  | 640 |  |
| 5-16-63 | 17 | 7.4 | 2.2 | 21 | 8.1 | 28 | 11 |  |  |  |  |  |  | 2.0 | 30 |  |  |  | .3 |  | .2 | .0 | .5 |  | 520 | 23,000 |
| 5-28-63 | 20 | 8.9 | 5.3 | 32 | 8.4 | 43 | 15 |  |  |  |  |  |  | 2.5 | 34 |  |  |  | .8 |  | .2 |  | .2 |  | 650 |  |
| 6-13-63 | 20 | 8.4 | 3.9 | 28 | 8.5 | 58 | 19 |  |  |  |  |  |  | --- | 34 |  |  |  | .6 |  | .3 |  | .0 |  | 500 | 2,300 |
| 7-11-63 | 25 | 11.1 | 7.2 | 33 | 8.5 | 41 | 20 |  |  |  |  |  |  | .0 | 32 |  |  |  | 2.0 |  | .2 |  | .0 |  | 550 |  |
| 7-30-63 | 28 | 7.2 | >7.2 | 30 | 8.3 | 52 | 16 |  |  |  |  |  |  | .3 | -- |  |  |  | 1.9 |  | .2 |  | --- |  | 550 | <460 |
| 8-13-63 | 24 | 5.0 | 7.2 | 39 | 8.0 | 107 | 37 |  |  |  |  |  |  | .8 | 34 |  |  |  | 2.7 |  | .3 | .0 | .4 |  | 510 |  |
| 8-27-63 | 25 | 10.2 | 7.6 | 31 | 8.3 | 38 | 14 |  |  |  |  |  |  | .0 | 36 |  |  |  | 3.5 |  | .2 | .0 | .0 |  | 590 | 91 |
| 9-12-63 | 23 | 7.1 | 5.5 | 34 | 8.1 | 120 | 29 | 548 | 1.5 | 94 | 30 | 27 | 3.7 | .2 | 36 | 170 | 220 |  | 3.0 | 360 | .3 |  | .2 |  | 740 |  |
| 9-25-63 | 17 | 8.8 | 7.3 | 30 | 8.3 | 58 | 13 |  |  |  |  |  |  | .5 | 36 |  |  |  | 1.5 |  | .2 | .0 | .4 |  | 630 | 910 |
| 10- 9-63 | 16 | 6.1 | 3.9 | 30 | 8.5 | -- | -- |  |  |  |  |  |  | .5 | 36 |  |  |  | 1.8 |  | .3 |  | .2 |  | 530 |  |
| 10-23-63 | 17 | 6.8 | 5.1 | 28 | 8.2 | 48 | 11 |  |  |  |  |  |  | --- | 51 |  |  |  | 3.2 |  | .5 |  | .2 |  | 670 | <4,600 |
| 11- 5-63 | 8 | 8.1 | 3.2 | 29 | 8.1 | 50 | 8 |  |  |  |  |  |  | 1.8 | 41 |  |  |  | 2.0 |  | .5 | .0 | .7 |  | 680 |  |
| 11-19-63 | 10 | 5.6 | 3.6 | 40 | 8.1 | 62 | 11 |  |  |  |  |  |  | 2.6 | 42 |  |  |  | 2.3 |  | .4 |  | .9 |  | 610 | 23,000 |
| 12- 2-63 | -2 | 10.2 | --- | 28 | 8.1 | 6 | -- | 398 | .3 | 70 | 22 | 29 | 3.3 | 3.6 | 42 | 85 | 215 |  | 1.7 | 265 | -- |  | --- |  | 620 |  |
| 16-63 | 0 | 11.5 | 7.6 | 58 | 8.1 | 157 | 36 |  |  |  |  |  |  | 2.6 | 44 |  |  |  | 1.9 |  | .4 |  | 1.4 |  | 620 | 4,300 |

Station: 2-HUR
HURON RIVER

RIVER ROAD BRIDGE

ROCKWOOD

| Date of Sample | Date of Analysis | Temp°C | D.O. | B.O.D. | C.O.D. | Suspended Solids | Vol. Suspended Solids | Total Solids | Vol. Total Solids | pH | Conductance Micro MHOS | Iron - Fe | Calcium - Ca | Magnesium - Mg | Sodium - Na | Potassium - K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mar. 14 | Mar. 15 | 4 | 12.8 | 7.4 | 36 | 56 | 11 | | | 8.0 | 690 | .4 | 74 | 23 | 32 | 3.2 |
| April 4 | April 4 | 8 | 10.2 | 5.6 | 33 | 104 | 8 | | | 8.0 | 500 | | | | | |
| April 19 | April 19 | 16 | 12.2 | 10.8 | 50 | 68 | 22 | | | 8.7 | 640 | | | | | |
| May 16 | May 17 | 17 | 7.4 | 2.2 | 21 | 28 | 11 | | | 8.1 | 520 | | | | | |
| May 28 | May 28 | 20 | 8.9 | 5.3 | 32 | 43 | 15 | | | 8.4 | 650 | | | | | |
| June 13 | June 13 | 20 | 8.4 | 3.9 | 28 | 58g | 19 | | | 8.5 | 500 | | | | | |
| July 11 | July 11 | 25 | 11.1 | 7.2 | 33 | 41 | 20 | | | 8.5 | 550 | | | | | |
| July 30 | July 31 | 28 | 7.2 | >7.2 | 30 | 52g | 16 | | | 8.3 | 550 | | | | | |
| Aug. 13 | Aug. 14 | 24 | 5.0 | 7.2 | 39 | 107 | 37 | | | 8.0 | 510 | | | | | |
| Aug. 27 | Aug. 28 | 25 | 10.2 | 7.6 | 31 | 38 | 14 | | | 8.3 | 590 | | | | | |
| Sept. 12 | Sept. 13 | 23 | 7.1 | 5.5 | 34 | 120g | 29 | | | 8.1 | 740 | 1.5 | 94 | 30 | 27 | 3.7 |
| Sept. 25 | Sept. 26 | 17 | 8.8 | 7.3 | 30 | 58 | 13 | | | 8.3 | 630 | | | | | |
| Oct. 9 | Oct. 10 | 16 | 6.1 | 3.9 | 30 | -- | -- | | | 8.5 | 530 | | | | | |
| Oct. 23 | Oct. 24 | 17 | 6.8 | 5.1 | 28 | 48 | 11 | | | 8.2 | 670 | | | | | |
| Nov. 5 | | 8 | 8.1 | 3.2 | 29 | 50 | 8 | | | 8.1 | 680 | | | | | |
| Nov. 19 | Nov. 20 | 10 | 5.6 | 3.6 | 40 | 62 | 11 | | | 8.1 | 610 | | | | | |
| Dec. 2 | Dec. 3 | -2 | 10.2 | | 28 | 6 | | | | 8.1 | 620 | .3 | 70 | 22 | 29 | 3.3 |
| Dec. 16 | Dec. 17 | 0 | 11.5 | 7.6 | 58 | 157 | 36 | | | 8.1 | 620 | | | | | |
| | | | | | | | | | | | | | | | | |
| | Max. | 28 | 12.8 | 10.8 | 58 | 157 | 37 | | | 8.7 | 740 | | | | | |
| | Min. | -2 | 5.0 | 2.2 | 21 | 6 | 8 | | | 8.0 | 500 | | | | | |
| | Med. | 17 | 8.8 | 5.6 | 32 | 56 | 15 | | | 8.2 | 620 | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

1963

| Station: 2-HUR | | Nitrate - $NO_3$-N | Chloride - Cl | Sulphate - $SO_4$ | Bicarbonate - $HCO_3$ | Carbonate - $CO_3$ | Phosphates - $PO_4$ | Hardness - $CaCO_3$ | Detergents - AD | Cyanide - CN | Phenols | Plankton | Coliforms MPN/100 ml | Dissolved Solids | $NH_3$-N | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date of Sample | Date of Analysis | | | | | | | | | | | | | | | |
| Mar. 14 | Mar. 15 | 2.7 | 49 | 59 | 260 | 0 | 2.0 | 280 | .5 | | | | | 416 | 2.3 | |
| April 4 | April 4 | 4.8 | 28 | | | | .4 | | .2 | | | | | | .9 | |
| April 19 | April 19 | 0 | 38 | | | | 1.3 | | .3 | | | | | | .0 | |
| May 16 | May 17 | 2.0 | 30 | | | | .3 | | .2 | .0 | | | 23,000 | | .5 | |
| May 28 | May 28 | 2.5 | 34 | | | | .8 | | .2 | | | | | | .2 | |
| June 13 | June 13 | | 34 | | | | .6 | | .3 | | | | 2,300 | | .0 | |
| July 11 | July 11 | .0 | 32 | | | | 2.0 | | .2 | | | | | | .0 | |
| July 30 | July 31 | .3 | -- | | | | 1.9 | | .2 | | | | <460 | | -- | |
| Aug. 13 | Aug. 14 | .8 | 34 | | | | 2.7 | | .3 | .0 | | | | | .4 | |
| Aug. 27 | Aug. 28 | .0 | 36 | | | | 3.5 | | .2 | .0 | | | 91 | | .0 | |
| Sept. 12 | Sept. 13 | .2 | 36 | 170 | 220 | | 3.0 | 360 | .3 | | | | | 548 | .2 | |
| Sept. 25 | Sept. 26 | .5 | 36 | | | | 1.5 | | .2 | .00 | | | 910 | | .4 | |
| Oct. 9 | Oct. 10 | .5 | 36 | | | | 1.8 | | .3 | | | | | | .2 | |
| Oct. 23 | Oct. 24 | | 51 | | | | 3.2 | | .5 | | | | <4,600 | | .2 | |
| Nov. 5 | | 1.8 | 41 | | | | 2.0 | | .5 | .0 | | | | | .7 | |
| Nov. 19 | Nov. 20 | 2.6 | 42 | | | | 2.3 | | .4 | | | | 23,000 | | .9 | |
| Dec. 2 | Dec. 3 | 3.6 | 42 | 85 | 215 | | 1.7 | 265 | | | | | | 398 | | |
| Dec. 16 | Dec. 17 | 2.6 | 44 | | | | 1.9 | | .4 | | | | 4,300 | | 1.4 | |
| | Max. | 4.8 | 51 | | | | 3.5 | | .5 | | | | 23,000 | | 2.3 | |
| | Min. | 0 | 28 | | | | .3 | | .2 | | | | 91 | | .0 | |
| | Med. | 1.8 | 36 | | | | 1.9 | | .3 | | | | 8,300 | | .4 | |

Station: 2-HUR

HURON RIVER

ROCKWOOD

| Date of Sample | Date of Analysis | Temp$^{o}$C | D.O. | B.O.D. | C.O.D. | Suspended Solids | Vol. Suspended Solids | Total Solids | Vol. Total Solids | pH | Conductance Micro MHOS | Iron - Fe | Calcium - Ca | Magnesium - Mg | Sodium - Na | Potassium - K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 6 | Jan. 7 | 1 | 10.3 | 3.0 | 26 | 14 | 5 | | | 8.0 | 810 | | | | | |
| Jan. 20 | Jan. 21 | 1 | 10.6 | -- | 25 | 15 | 6 | | | 7.9 | 770 | .2 | | | | |
| Feb. 24 | Feb. 25 | 1 | 12.2 | 5.3 | 33 | 19 | 9 | | | 8.2 | 700 | | | | | |
| Mar. 17 | Mar. 18 | 6 | 12.2 | 8.3 | 34 | $47^{g}$ | 11 | | | 8.3 | 710 | | | | | |
| Mar. 30 | Mar. 31 | 3 | 14.5 | 10.7 | 37 | $28^{g}$ | 12 | | | 8.6 | 600 | | | | | |
| April 13 | April 14 | 13 | 10.5 | 12.8 | 43 | $70^{g}$ | 19 | | | 8.8 | 620 | | | | | |
| April 28 | April 29 | 14 | 7.8 | 10.4 | 41 | 77 | 25 | | | -- | 600 | | | | | |
| May 11 | May 12 | 17 | 7.8 | -- | 39 | 73 | 17 | | | 8.2 | 600 | | | | | |
| May 26 | May 27 | 22 | 7.6 | 5.2 | 36 | $62^{g}$ | -- | | | -- | 700 | | | | | |
| June 10 | June 11 | 24 | 6.2 | 5.8 | 44 | 70 | 10 | | | 8.0 | 610 | | | | | |
| June 23 | June 24 | 27 | 10.7 | 6.4 | 44 | $40^{g}$ | 13 | | | 8.6 | 600 | | | | | |
| July 6 | July 7 | 24 | 11.2 | 8.8 | 42 | 50 | 19 | | | 8.6 | 580 | | | | | |
| July 20 | July 21 | 29 | 11.0 | 10.2 | -- | 39 | 16 | | | 8.8 | 600 | | | | | |
| Aug. 10 | Aug. 11 | 23 | 8.3 | 7.5 | 42 | 59 | 13 | | | 8.5 | 660 | | | | | |
| Aug. 24 | Aug. 25 | 20 | 5.1 | >5.1 | 32 | 77 | 14 | | | 7.8 | 600 | | | | | |
| Sept. 8 | Sept. 9 | 23 | 11.0 | 6.7 | -- | 41 | 15 | | | 8.7 | 610 | | | | | |
| Oct. 7 | Oct. 8 | 11 | 8.3 | 4.3 | 35 | 46 | 9 | | | 8.3 | 630 | | | | | |
| Oct. 19 | Oct. 20 | 12 | 6.4 | 5.2 | 35 | 95 | 9 | | | 8.3 | 830 | | | | | |
| Nov. 3 | Nov. 4 | 11 | 7.3 | 4.6 | 32 | 43 | 10 | | | 8.2 | 790 | | | | | |
| Nov. 17 | Nov. 18 | 10 | 8.2 | 3.8 | 36 | -- | -- | | | -- | 620 | | | | | |
| Dec. 1 | Dec. 2 | 1 | 12.0 | 4.1 | 34 | 10 | 10 | | | 8.4 | 600 | | | | | |
| Dec. 15 | Dec. 16 | 0 | 12.6 | 4.2 | -- | 8 | -- | | | -- | 640 | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

1964

| Station: 2-HUR<br>Date of Sample | Date of Analysis | Nitrate - $NO_3$-N | Chloride - Cl | Sulphate - $SO_4$ | Bicarbonate - $HCO_3$ | Carbonate - $CO_3$ | Phosphates - $PO_4$ | Hardness - $CaCO_3$ | Detergents - AD | Cyanide - CN | Phenols | Coliforms MPN/100 ml | Plankton | Dissolved Solids | $NH_3$-N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 6 | Jan. 7 | 2.0 | 50 | | | | 1.8 | | .6 | | .000 | | | | 1.7 |
| Jan. 20 | Jan. 21 | 3.0 | 46 | | | | 1.8 | | .6 | .00 | .000 | 43,000 | | | 1.6 |
| Feb. 24 | Feb. 25 | 3.0 | 52 | | | | 2.1 | | .5 | | | 2,300 | | | 1.8 |
| Mar. 17 | Mar. 18 | 4.2 | 46 | | | | 2.0 | | .5 | | | 23,000 | | | .8 |
| Mar. 30 | Mar. 31 | 4.1 | 48 | | | | 1.4 | | .4 | | | | | | .7 |
| April 13 | April 14 | 3.0 | 58 | | | | .9 | | .4 | | | 4,300 | | | .2 |
| April 28 | April 29 | 3.0 | 44 | | | | .8 | | .5 | | | | | | .2 |
| May 11 | May 12 | 2.5 | 40 | | | | .2 | | -- | | | 4,300 | | | .2 |
| May 26 | May 27 | 3.6 | 36 | | | | 1.0 | | -- | | | | | | -- |
| June 10 | June 11 | 4.0 | 30 | | | | .6 | | .2 | | | 4,300 | | | .2 |
| June 23 | June 24 | .0 | 36 | | | | .7 | | .2 | .00 | | | | | .0 |
| July 6 | July 7 | .0 | 32 | | | | .9 | | .2 | | | <460 | | | .2 |
| July 20 | July 21 | .0 | 37 | | | | 1.3 | | .2 | .00 | | | | | .0 |
| Aug. 10 | Aug. 11 | .0 | 42 | | | | 2.1 | | .2 | | | <4,300 | | | .0 |
| Aug. 24 | Aug. 25 | 4.0 | 40 | | | | 1.4 | | .2 | | | | | | .2 |
| Sept. 8 | Sept. 9 | .0 | 41 | | | | 1.8 | | .2 | | | <460 | | | .0 |
| Oct. 7 | Oct. 8 | .9 | 43 | | | | 1.3 | | .3 | | | | | | .1 |
| Oct. 19 | Oct. 20 | .7 | 46 | | | | 1.6 | | .3 | | | 2,300 | | | .0 |
| Nov. 3 | Nov. 4 | .7 | 44 | | | | 1.1 | | .3 | | | | | | .2 |
| Nov. 17 | Nov. 18 | 1.5 | 44 | | 210 | | 1.0 | 255 | -- | .00 | | 9,300 | | | .3 |
| Dec. 1 | Dec. 2 | 1.5 | 45 | | | | 1.3 | | .2 | | | | | | .6 |
| Dec. 15 | Dec. 16 | 2.2 | 52 | | | | 1.5 | | .2 | | | 43,000 | | | .8 |

Station: 2-HUR

HURON RIVER

ROCKWOOD

| Date of Sample | Date of Analysis | Temp$^{o}$C | D.O. | B.O.D. | C.O.D. | Suspended Solids | Vol. Suspended Solids | Total Solids | Vol. Total Solids | pH | Conductance Micro MHOS | Iron - Fe | Calcium - Ca | Magnesium - Mg | Sodium - Na | Potassium - K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 11 | Jan. 12 | 1 | 12.7 | | Broken in Transit | | | | | | | | | | | |
| Jan. 26 | Jan. 27 | 2 | 12.6 | 5.4 | 24 | 12 | 6 | | | 8.3 | 700 | | | | | |
| Feb. 8 | Feb. 9 | 3 | 12.0 | 6.0 | 27 | 34 | 8 | | | 8.2 | 670 | | | | | |
| Feb. 22 | Feb. 23 | 0 | 12.5 | 5.5 | 17 | 30 | 10 | | | 8.0 | 610 | | | | | |
| Mar. 9 | Mar. 10 | 2 | 11.7 | 4.5 | 23 | 33 | 8 | | | 7.8 | 480 | | | | | |
| Mar. 22 | Mar. 23 | 2 | 13.6 | 5.6 | -- | -- | -- | | | 7.9 | 520 | | | | | |
| April 7 | April 8 | 6 | 10.8 | 4.1 | -- | 28 | 7 | | | 8.1 | 550 | | | | | |
| April 21 | April 22 | 9 | 10.0 | 6.0 | -- | 91 | 14 | | | 8.0 | 530 | | | | | |
| May 4 | May 5 | 17 | 9.3 | 8.7 | 38 | -- | -- | | | -- | 600 | | | | | |
| May 18 | May 19 | 18 | 7.6 | 8.6 | 35 | 100 | 19 | | | 8.0 | 590 | | | | | |
| June 3 | June 4 | 18 | 6.7 | 5.6 | 23 | 43 | 12 | | | 8.0 | -- | | | | | |
| June 21 | June 22 | 24 | 5.6 | -- | -- | -- | -- | | | 8.3 | 560 | | 80 | 12 | 21 | 2.6 |
| July 7 | July 8 | 24 | 7.0 | 5.2 | 30 | 50 | 11 | | | 8.2 | -- | | | | | |
| July 27 | July 28 | 26 | 9.2 | -- | -- | -- | -- | | | 8.7 | 690 | | 90 | 25 | 25 | 3.0 |
| Aug. 23 | Aug. 24 | 21 | 8.2 | 7.4 | 29 | 61 | 18 | | | 8.2 | -- | | | | | |
| Sept. 22 | Sept. 23 | 24 | 5.0 | 6.2 | -- | 56 | -- | | | 8.3 | -- | | | | | |
| Oct. 6 | Oct. 7 | 12 | 9.0 | 2.8 | -- | 38 | 12 | | | 8.5 | 600 | | | | | |
| Dec. 6 | Dec. 7 | 3 | 11.4 | 4.7 | 21 | 20 | 7 | | | 8.4 | 600 | | | | | |

1965

| Station: 2-HUR<br>Date of Sample | Date of Analysis | Nitrate - $NO_3$-N | Chloride - Cl | Sulphate - $SO_4$ | Bicarbonate - $HCO_3$ | Carbonate - $CO_3$ | Phosphates - $PO_4$ | Hardness - $CaCO_3$ | Detergents - AD | Cyanide - CN | Phenols | Coliforms MPN/100 ml | Plankton | Dissolved Solids | $NH_3$-N | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 11 | Jan. 12 | Broken in Transit | | | | | | | | | | | | | | |
| Jan. 26 | Jan. 27 | 3.2 | 56 | | | | 1.5 | | .2 | | | 4,300 | | | 1.4 | |
| Feb. 8 | Feb. 9 | 4.0 | 56 | | | | 1.5 | | .3 | | | | | | 1.2 | |
| Feb. 22 | Feb. 23 | 3.3 | 47 | | | | .9 | | .2 | | | 4,300 | | | 1.2 | |
| Mar. 9 | Mar. 10 | 3.7 | 33 | | | | .7 | | .1 | | | | | | .7 | |
| Mar. 22 | Mar. 23 | 5.0 | 28 | | | | .7 | | .1 | .00 | | 4,300 | | | .5 | |
| April 7 | April 8 | 4.5 | 39 | | | | 1.0 | | .2 | | | | | | .9 | |
| April 21 | April 22 | 4.1 | 32 | | | | .4 | | -- | | | 9,300 | | | .5 | |
| May 4 | May 5 | 1.9 | 40 | | | | .2 | | -- | | | | | | .2 | |
| May 18 | May 19 | .0 | 32 | | | | .3 | | .2 | | | 4,300 | | | .0 | |
| June 3 | June 4 | .5 | -- | | | | .3 | | .1 | | | | | | .0 | |
| June 21 | June 22 | -- | 35 | 80 | 200 | | -- | 250 | -- | | | 240,000 | | | -- | |
| July 7 | July 8 | .0 | -- | | | | .6 | | .1 | | | | | | .0 | |
| July 27 | July 28 | -- | 40 | 112 | 210 | | -- | 330 | -- | | | 360 | | | -- | |
| Aug. 23 | Aug. 24 | .2 | -- | | | | .8 | | .1 | | | <300 | | | .0 | |
| Sept. 22 | Sept. 23 | -- | -- | | | | -- | | -- | | .000 | 9,300 | | | -- | |
| Oct. 6 | Oct. 7 | .8 | 48 | | | | 1.0 | | .0 | | .000 | | | | .0 | |
| Dec. 6 | Dec. 7 | 2.4 | 44 | | | | 1.5 | | .2 | | | 7,500 | | | .8 | |

Station: 2-HUR

HURON RIVER

ROCKWOOD

| Date of Sample | Date of Analysis | Temp $^{o}$C | D.O. | B.O.D. | C.O.D. | Suspended Solids | Vol. Suspended Solids | Total Solids | Vol. Total Solids | pH | Conductance Micro MHOS | Iron - Fe | Calcium - Ca | Magnesium - Mg | Sodium - Na | Potassium - K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 26 | Jan. 27 | 0 | 12.2 | 5.4 | 25 | 19 | 5 | -- | -- | 8.0 | 700 | -- | -- | -- | -- | -- |
| Feb. 8 | Feb. 9 | 0 | 11.8 | 3.2 | 25 | 12 | 4 | -- | -- | 8.0 | 700 | -- | -- | -- | -- | -- |
| Feb. 22 | Feb. 23 | .5 | 13.0 | - | 24 | 25 | 9 | -- | -- | 8.0 | 730 | -- | -- | -- | -- | -- |
| | | | | | | | | | | | | | | | | |
| April 6 | April 8 | 6.5 | 13.7 | 9.0 | 27 | 35 | 14 | -- | -- | 8.6 | 570 | -- | -- | -- | -- | -- |
| April 27 | April 28 | 9 | 9.0 | - | 28 | 60 | 16 | -- | -- | 7.8 | 550 | -- | -- | -- | -- | -- |
| May 9 | May 10 | 10 | 10.4 | - | 27 | 51 | 18 | -- | -- | 8.4 | 580 | -- | -- | -- | -- | -- |

1966

| Station: 2-HUR | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date of Sample | Date of Analysis | Nitrate - $NO_3$-N | Chloride - Cl | Sulphate - $SO_4$ | Bicarbonate - $HCO_3$ | Carbonate - $CO_3$ | Phosphates - $PO_4$ | Hardness - $CaCO_3$ | Detergents - AD | Cyanide - CN | Phenols | Coliforms MPN/100 ml | Plankton | Dissolved Solids | $NH_3$-N |
| Jan. 26 | Jan. 27 | 1.8 | 40 | -- | -- | -- | 1.0 | -- | .1 | -- | .004 | 15,000 | -- | -- | .5 |
| Feb. 8 | Feb. 9 | 2.2 | 41 | -- | -- | -- | 1.1 | -- | .0 | -- | -- | 43,000 | -- | -- | .8 |
| Feb. 22 | Feb. 23 | 1.5 | 44 | -- | -- | -- | 1.3 | -- | .2 | -- | .004 | -- | -- | -- | 1.0 |
| | | | | | | | | | | | | | | | |
| April 6 | April 8 | .35 | 35 | -- | -- | -- | .8 | -- | -- | -- | -- | 910 | -- | -- | .0 |
| April 26 | April 27 | .46 | 54 | -- | -- | -- | .5 | -- | .1 | -- | -- | -- | -- | -- | .0 |
| May 9 | May 10 | .52 | 36 | -- | -- | -- | .4 | -- | -- | -- | -- | 15,000 | -- | -- | .0 |

# APPENDIX G

# RAISIN RIVER
AT
MIDDLE OF DREDGED CHANNEL BELOW
MONROE WASTE WATER TREATMENT PLANT

1963

Station: 1-RAI

RAISIN RIVER

MIDDLE OF CHANNEL
BELOW S.T.P.
MONROE

| Date of Sample | Date of Analysis | Temp°C | D.O. | B.O.D. | C.O.D. | Suspended Solids | Vol. Suspended Solids | Total Solids | Vol. Total Solids | pH | Conductance Micro MHOS | Iron - Fe | Calcium - Ca | Magnesium - Mg | Sodium - Na | Potassium - K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 28 | May 29 | 21 | 3.6 | 11.4 | 39 | 20 | 8 | | | 7.6 | 540 | .3 | 80 | 11 | 20 | 5.2 |
| June 13 | June 13 | 22 | 2.1 | 7.6 | 35 | 28g | 18 | | | 7.6 | 560 | | | | | |
| July 11 | July 11 | 25 | 3.6 | 6.0 | 32 | 27g | 18 | | | 7.8 | 440 | | | | | |
| July 30 | July 31 | 28 | 0 | 9.0 | 31 | 18 | 9 | | | 7.8 | 390 | | | | | |
| Aug. 13 | Aug. 14 | 25 | 0 | 20 | 40 | 25 | 14 | | | 7.2 | 420 | | | | | |
| Aug. 27 | Aug. 28 | 23 | trace | 7.0 | 24 | 25 | 10 | | | | 440 | | | | | |
| Sept. 12 | Sept. 13 | 24 | 0 | 25 | 45 | 34 | 20 | | | 7.1 | 450 | .5 | 50 | 14 | 25 | 7.8 |
| Sept. 25 | Sept. 26 | 18 | 0 | 20 | 85 | 320 | 60 | | | 7.4 | 500 | | | | | |
| Oct. 9 | Oct. 10 | 17 | trace | 19 | 48 | 66 | 26 | | | 7.6 | 480 | | | | | |
| Oct. 23 | Oct. 24 | 18 | trace | 18 | 45 | 64 | 21 | | | 7.5 | 500 | | | | | |
| Nov. 5 | | 10 | 1.3 | 7.5 | 34 | 37 | 15 | | | 7.5 | 520 | | | | | |
| Nov. 19 | Nov. 20 | 10 | 2.2 | 12.7 | 58 | 43 | 13 | | | 7.6 | 500 | | | | | |
| Dec. 2 | Dec. 3 | -2 | 7.3 | | 26 | 20 | 8 | | | 8.0 | 500 | .4 | 57 | 14 | 22 | 11 |
| Dec. 16 | Dec. 17 | 1 | 13.0 | 4.1 | 16 | 17 | 9 | | | 8.1 | 350 | | | | | |
| | | | | | | | | | | | | | | | | |
| | Max. | 28 | 13.0 | 25 | 85 | 320 | 60 | | | 8.1 | 560 | | | | | |
| | Min. | -2 | 0 | 4.1 | 16 | 17 | 8 | | | 7.1 | 350 | | | | | |
| | Med. | 21 | 1.3 | 11.4 | 39 | 28 | 15 | | | 7.6 | 500 | | | | | |

| Station: 1-RAI | | Nitrate - $NO_3$-N | Chloride - Cl | Sulphate - $SO_4$ | Bicarbonate - $HCO_3$ | Carbonate - $CO_3$ | Phosphates - $PO_4$ | Hardness - $CaCO_3$ | Detergents - AD | Cyanide - CN | Phenols | Coliforms MPN/100 ml | Plankton | Dissolved Solids | $NH_3$-N | CNS | $H_2S$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date of Sample | Date of Analysis | | | | | | | | | | | | | | | | |
| May 28 | May 29 | .0 | 27 | 83 | 205 | 0 | .0 | 245 | .2 | .0 | | 1,400,000 | | 352 | .2 | | |
| June 13 | June 13 | | 26 | | | | .1 | | .2 | | | 1,100,000 | | | .7 | | |
| July 11 | July 11 | .0 | 28 | | | .3 | | | .2 | .10 | | | | | .0 | | |
| July 30 | July 31 | .2 | 28 | | | | .2 | | .1 | | | 7,300 | | | .6 | | |
| Aug. 13 | Aug. 14 | .0 | 30 | | | | .3 | | .2 | .0 | | | | | .5 | .2 | trace |
| Aug. 27 | Aug. 28 | .0 | 26 | | | | .3 | | .2 | .36 | | 43,000 | | | .4 | | |
| Sept. 12 | Sept. 13 | .0 | 32 | 60 | 162 | | .1 | 180 | .2 | | | | | 292 | .4 | | |
| Sept. 25 | Sept. 26 | .5 | 34 | | | | .3 | | .1 | .25 | | 230,000 | | | 1.5 | | |
| Oct. 9 | Oct. 10 | .0 | 32 | | | | .0 | | .4 | | | | | | .3 | | |
| Oct. 23 | Oct. 24 | | 36 | | | | .6 | | .4 | | | >140,000 | | | 1.0 | | |
| Nov. 5 | | .0 | 40 | | | | .2 | | .5 | .7 | | | | | .0 | | |
| Nov. 19 | Nov. 20 | .4 | 36 | | | | .0 | | .3 | .25 | | >140,000 | | | .2 | | |
| Dec. 2 | Dec. 3 | .6 | 30 | 63 | 190 | | .5 | 200 | | | | | | 300 | | | |
| Dec. 16 | Dec. 17 | 1.0 | 23 | | | | .1 | | .2 | | | 360 | | | .0 | | |
| | | | | | | | | | | | | | | | | | |
| | Max. | 1.0 | 40 | | | | .6 | | .5 | | | 1,400,000 | | | 1.5 | | |
| | Min. | .0 | 23 | | | | .0 | | .1 | | | 360 | | | .0 | | |
| | Med. | .0 | 30 | | | | .2 | | .2 | | | >140,000 | | | .4 | | |

1964

| Station: 1-RAI<br>RAISIN RIVER<br>MONROE | | Temp°C | D.O. | B.O.D. | C.O.D. | Suspended Solids | Vol. Suspended Solids | Total Solids | Vol. Total Solids | pH | Conductance Micro MHOS | Iron - Fe | Calcium - Ca | Magnesium - Mg | Sodium - Na | Potassium - K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date of Sample | Date of Analysis | | | | | | | | | | | | | | | |
| Jan. 6 | Jan. 7 | 2 | 11.6 | 13.5 | 26 | 20 | 7 | | | 7.8 | 470 | | | | | |
| Jan. 20 | Jan. 21 | 3 | 10.4 | -- | 34 | 9 | -- | | | 7.6 | 530 | .3 | | | | |
| Feb. 24 | Feb. 25 | 0 | 17.0 | 4.7 | 15 | 10 | 8 | | | 8.7 | 300 | | | | | |
| Mar. 17 | Mar. 18 | 4 | 10.6 | 9.6 | 39 | 42 | 14 | | | 7.9 | 600 | | | | | |
| Mar. 30 | Mar. 31 | 3 | 11.9 | 3.8 | 22 | 30 | 8 | | | 8.2 | 600 | | | | | |
| April 13 | April 14 | 13 | 9.0 | 7.8 | 33 | 35 | 11 | | | 8.1 | 680 | | | | | |
| April 28 | April 29 | 15 | 6.0 | 8.2 | 37 | 31 | 14 | | | 7.9 | 610 | | | | | |
| May 11 | May 12 | 20 | 4.8 | -- | 42 | 29 | 9 | | | 7.9 | 680 | | | | | |
| May 26 | May 27 | 22 | .6 | 9.5 | 52 | 35 | -- | | | -- | 530 | | | | | |
| June 10 | June 11 | 24 | 1.0 | 8.8 | 52 | 90 | 18 | | | 7.6 | 600 | | | | | |
| June 23 | June 24 | 28 | .0 | 16 | 61 | 30 | 19 | | | 7.3 | 500 | | | | | |
| July 6 | July 7 | 25 | 2.8 | 6.0 | 30 | 32 | 16 | | | 7.8 | 450 | | | | | |
| July 20 | July 21 | 27 | trace | 10 | -- | 25 | 15 | | | 7.8 | 420 | | | | | |
| Aug. 10 | Aug. 11 | 24 | .2 | 21.6 | 50 | 27 | 14 | | | 7.1 | 444 | | | | | |
| Aug. 24 | Aug. 25 | 22 | .2 | 16.8 | 45 | 22 | 8 | | | 7.3 | 500 | | | | | |
| Sept. 8 | Sept. 9 | 24 | .6 | 7.6 | -- | 27 | 13 | | | 7.4 | 450 | | | | | |
| Oct. 7 | Oct. 8 | 13 | 1.4 | 8.4 | 42 | 28 | 13 | | | 7.7 | 500 | | | | | |
| Oct. 19 | Oct. 20 | 13 | 1.3 | >21 | 77 | 59 | 20 | | | 7.4 | 500 | | | | | |
| Nov. 3 | Nov. 4 | 12 | .2 | 13 | 50 | 32 | 15 | | | 7.6 | 500 | | | | | |
| Nov. 17 | Nov. 18 | 11 | .5 | 18.5 | 50 | -- | -- | | | -- | 600 | | | | | |
| Dec. 1 | Dec. 2 | 2 | 7.7 | 12.5 | 42 | 48 | 17 | | | 7.7 | 510 | | | | | |
| Dec. 15 | Dec. 16 | 1 | 6.4 | 18.5 | -- | 24 | -- | | | -- | 540 | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

Station: 1-RAI

| Date of Sample | Date of Analysis | Nitrate - $NO_3$-N | Chloride - Cl | Sulphate - $SO_4$ | Bicarbonate - $HCO_3$ | Carbonate - $CO_3$ | Phosphates - $PO_4$ | Hardness - $CaCO_3$ | Detergents - AD | Cyanide - CN | Phenols | Coliforms MPN/100 ml | Plankton | Dissolved Solids | $NH_3$-N | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 6 | Jan. 7 | 1.0 | 40 | | | | .4 | | .3 | | .008 | | | | .0 | |
| Jan. 20 | Jan. 21 | 1.6 | 40 | | | | .3 | | .4 | .3 | .008 | 43,000 | | | .0 | |
| Feb. 24 | Feb. 25 | .5 | 25 | | | | .2 | | .2 | | | <460 | | | .0 | |
| Mar. 17 | Mar. 18 | 8.5 | 40 | | | | .4 | | .4 | | | 4,300 | | | .0 | |
| Mar. 30 | Mar. 31 | 26. | 39 | | | | .4 | | .3 | | | | | | .5 | |
| April 13 | April 14 | 28. | 39 | | | | .2 | | .3 | | | 21,000 | | | .2 | |
| April 28 | April 29 | 16.8 | 37 | | | | .1 | | .3 | | | | | | .3 | |
| May 11 | May 12 | 10.0 | 36 | | | | .2 | | -- | | | 15,000 | | | .3 | |
| May 26 | May 27 | .0 | 28 | | | | .0 | | -- | | | | | | -- | |
| June 10 | June 11 | 3.5 | 32 | | | | .2 | | .2 | | | 43,000 | | | .2 | |
| June 23 | June 24 | .0 | 28 | | | | .1 | | .2 | | | | | | .2 | |
| July 6 | July 7 | .0 | 30 | | | | .4 | | .1 | | | 43,000 | | | .8 | |
| July 20 | July 21 | .0 | 28 | | | | .4 | | .1 | .00 | | | | | .2 | |
| Aug. 10 | Aug. 11 | .0 | 33 | | | | .1 | | .1 | | | 15,000 | | | .0 | |
| Aug. 24 | Aug. 25 | .0 | 34 | | | | .4 | | .1 | | | | | | .2 | |
| Sept. 8 | Sept. 9 | .0 | 34 | | | | .5 | | .1 | | | 2,300 | | | .2 | |
| Oct. 7 | Oct. 8 | .0 | 32 | | | | .3 | | .2 | | | | | | .0 | |
| Oct. 19 | Oct. 20 | .0 | 32 | | | | .0 | | .2 | | | >1,400,000 | | | .0 | |
| Nov. 3 | Nov. 4 | .0 | 29 | | | | .1 | | .2 | | | | | | .1 | |
| Nov. 17 | Nov. 18 | .0 | 34 | | 200 | | .3 | 225 | -- | .5 | | 460,000 | | | .0 | |
| Dec. 1 | Dec. 2 | .9 | 32 | | | | .5 | | .1 | | | | | | .0 | |
| Dec. 15 | Dec. 16 | 1.0 | 42 | | | | .3 | | -- | | | 23,000 | | | .0 | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

1965
Station: 1-RAI
RAISIN RIVER
MONROE

| Date of Sample | Date of Analysis | Temp$^{o}$C | D.O. | B.O.D. | C.O.D. | Suspended Solids | Vol. Suspended Solids | Total Solids | Vol. Total Solids | pH | Conductance Micro MHOS | Iron - Fe | Calcium - Ca | Magnesium - Mg | Sodium - Na | Potassium - K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 11 | Jan. 12 | 1 | 12.1 | Broken in transit | | | | | | | | | | | | |
| Jan. 26 | Jan. 27 | 2 | 12.1 | 11.3 | 33 | 16 | 7 | | | 8.0 | 720 | | | | | |
| Feb. 8 | Feb. 9 | 3 | 12.2 | 10.1 | 32 | 15 | 8 | | | 7.9 | 690 | | | | | |
| Feb. 22 | Feb. 23 | 0 | 12.1 | 16.4 | 90 | 172 | 90 | | | 7.8 | 620 | | | | | |
| Mar. 9 | Mar. 10 | 1 | 11.8 | 6.2 | 39 | 113 | 17 | | | 7.7 | 290 | | | | | |
| Mar. 22 | Mar. 23 | 3 | 13.1 | 7.1 | -- | -- | -- | | | 8.0 | 610 | | | | | |
| April 7 | April 8 | 6 | 11.2 | 7.6 | -- | 42 | 11 | | | 7.8 | 580 | | | | | |
| April 21 | April 22 | 11 | 9.8 | 6.9 | -- | 51 | 11 | | | 7.9 | 610 | | | | | |
| May 4 | May 5 | 16 | 10.0 | 6.4 | 31 | -- | -- | | | -- | 610 | | | | | |
| May 18 | May 19 | 20 | 4.5 | 6.4 | 26 | 24 | 7 | | | 7.8 | 550 | | | | | |
| June 3 | June 4 | 21 | 2.2 | 8.4 | 36 | 178 | 33 | | | 7.5 | -- | | | | | |
| June 21 | June 22 | 23 | .1 | -- | -- | -- | -- | | | 7.1 | 480 | | 66 | 7 | 37 | 5.6 |
| July 7 | July 8 | 24 | 2.8 | 10.4 | 50 | 152 | 23 | | | 7.5 | -- | | | | | |
| July 27 | July 28 | 27 | trace | -- | -- | -- | -- | | | 7.3 | 500 | | 60 | 11 | 24 | 5.9 |
| Aug. 23 | Aug. 24 | 22 | .0 | 18.0 | 46 | 28 | 14 | | | 7.0 | -- | | | | | |
| Sept. 22 | Sept. 23 | 23 | .3 | 7.0 | -- | 30 | -- | | | 7.4 | -- | | | | | |
| Oct. 6 | Oct. 7 | 14 | .4 | 15.0 | -- | 38 | 19 | | | 7.6 | 610 | | | | | |
| Dec. 6 | Dec. 7 | 4 | 11.4 | 22.8 | 45 | 42 | 16 | | | 8.1 | 600 | | | | | |
| | | | | | | | | | | | | | | | | |
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1965

Station: 1-RAI

| Date of Sample | Date of Analysis | Nitrate - $NO_3$-N | Chloride - Cl | Sulphate - $SO_4$ | Bicarbonate - $HCO_3$ | Carbonate - $CO_3$ | Phosphates - $PO_4$ | Hardness - $CaCO_3$ | Detergents - AD | Cyanide - CN | Phenols | Coliforms MPN/100 ml | Plankton | Dissolved Solids | $NH_3$-N | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 11 | Jan. 12 | Broken in transit | | | | | | | | | | | | | | |
| Jan. 26 | Jan. 27 | 11.0 | 48 | | | | .4 | | .2 | | | 43,000 | | | .0 | |
| Feb. 8 | Feb. 9 | 12.5 | 42 | | | | .6 | | -- | | | | | | .0 | |
| Feb. 22 | Feb. 23 | 12.2 | 30 | | | | .2 | | .2 | | | 9,300 | | | .0 | |
| Mar. 9 | Mar. 10 | 9.2 | 9 | | | | .3 | | .0 | | | | | | .2 | |
| Mar. 22 | Mar. 23 | 17.0 | 30 | | | | .4 | | .1 | .35 | | 4,300 | | | .0 | |
| April 7 | April 8 | 17.0 | 24 | | | | .2 | | .1 | .02 | | | | | .0 | |
| April 21 | April 22 | 13.2 | 26 | | | | .0 | | -- | trace | | 240,000 | | | .0 | |
| May 4 | May 5 | 6.3 | 29 | | | | .3 | | -- | .0 | | | | | .0 | |
| May 18 | May 19 | 2.5 | 29 | | | | .2 | | .1 | | | 93,000 | | | .4 | |
| June 3 | June 4 | .0 | -- | | | | .2 | | .2 | | | | | | .0 | |
| June 21 | June 22 | -- | 29 | 64 | 160 | | -- | 195 | -- | | | 240,000 | | | -- | |
| July 7 | July 8 | .0 | -- | | | | .2 | | .1 | | | | | | .0 | |
| July 27 | July 28 | -- | 30 | 67 | 165 | | -- | 195 | -- | .40 | | 460,000 | | | -- | |
| Aug. 23 | Aug. 24 | .4 | -- | | | | .5 | | .1 | .10 | | 15,000 | | | .2 | |
| Sept. 22 | Sept. 23 | -- | -- | | | | -- | | -- | | | 3,600 | | | -- | |
| Oct. 6 | Oct. 7 | .0 | 34 | | | | .3 | | .1 | .2 | | | | | .0 | |
| Dec. 6 | Dec. 7 | 8.5 | 30 | | | | .4 | | .1 | | | 93,000 | | | .0 | |
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1966

Station: 1-RAI

RAISIN RIVER

MONROE

| Date of Sample | Date of Analysis | Temp$^{o}$C | D.O. | B.O.D. | C.O.D. | Suspended Solids | Vol. Suspended Solids | Total Solids | Vol. Total Solids | pH | Conductance Micro MHOS | Iron - Fe | Calcium - Ca | Magnesium - Mg | Sodium - Na | Potassium - K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 26 | Jan. 27 | 1 | 13.3 | 11.8 | 34 | 22 | 11 | -- | -- | 7.8 | 610 | -- | -- | -- | -- | -- |
| Feb. 8 | Feb. 9 | 1 | 14.6 | 4.4 | 13 | 10 | 3 | -- | -- | 8.2 | 330 | -- | -- | -- | -- | -- |
| Feb. 22 | Feb. 23 | 2 | 13.0 | -- | 27 | 21 | 11 | -- | -- | 8.0 | 590 | -- | -- | -- | -- | -- |
| | | | | | | | | | | | | | | | | |
| April 6 | April 8 | 6.5 | 12.0 | 11.6 | 22 | 24 | 11 | -- | -- | 8.4 | 600 | -- | -- | -- | -- | -- |
| April 27 | April 28 | 11 | 8.7 | -- | 52 | 111 | 36 | -- | -- | 7.8 | 650 | -- | -- | -- | -- | -- |
| May 9 | May 10 | 11 | 7.8 | Broken in transit | | | | | | | | | | | | |
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1966

Station: 1-RAI

| Date of Sample | Date of Analysis | Nitrate - $NO_3$-N | Chloride - Cl | Sulphate - $SO_4$ | Bicarbonate - $HCO_3$ | Carbonate - $CO_3$ | Phosphates - $PO_4$ | Hardness - $CaCO_3$ | Detergents - AD | Cyanide - CN | Phenols | Coliforms MPN/100 ml | Plankton | Dissolved Solids | $NH_3$-N | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 26 | Jan. 27 | 1.6 | 29 | -- | | | .5 | | .2 | | | <300 | | | .0 | |
| Feb. 8 | Feb. 9 | .88 | 32 | -- | | | .1 | | .0 | | | 4,300 | | | .0 | |
| Feb. 22 | Feb. 23 | 2.4 | 32 | -- | | | .3 | | .2 | | | -- | | | .0 | |
| | | | | | | | | | | | | | | | | |
| April 6 | April 8 | 2.5 | 30 | -- | | | .5 | | -- | | | <300 | | | .0 | |
| April 27 | April 28 | 3.6 | 35 | -- | | | .0 | | .0 | | | -- | | | .0 | |
| May 9 | May 10 | ---------- | ------ | Broken in transit | | | ---- | ---- | ---- | ---- | ---- | 15,000 | ---- | ---- | ---- | ---- |

# APPENDIX H

# RECOMMENDED
# WATER QUALITY CRITERIA
# for
# INTERSTATE WATERCOURSES
# at the
# MICHIGAN - OHIO
# STATE BOUNDARY

Michigan Water Resources Commission
Station B, 200 Mill Street
Lansing, Michigan

# RECOMMENDED
# WATER QUALITY CRITERIA
# for
# MICHIGAN - OHIO
# INTERSTATE WATERCOURSES

Water criteria are herein provided to fulfill the provisions of the Federal Water Pollution Control Act (PL 89-234) adopted in 1965. Said Act provides the appropriate state authority to establish water quality criteria to protect the public health or welfare, and enhance the quality of the water. In establishing such criteria, the authority is urged to take into consideration their use and value for public water supplies, propagation of fish and wildlife, recreation purposes, and agricultural, industrial and other legitimate uses.

| Constituents | Recommended Criteria |
|---|---|
| COLIFORM<br>(Total organisms/100ml) | As the result of industrial or domestic activity the median MPN during the interval of April 1 to October 31 shall not exceed 1000 for samples collected on 10 or more days during any one |

| | |
|---|---|
| | month, nor shall 20% or more of these samples exceed an MPN of 5000. During the interval of November 1 to March 31 of the succeeding year the median MPN shall not exceed 5000 for samples collected on 10 or more days during any one month, nor shall 20% or more of the monthly samples exceed an MPN of 10,000. |
| DISSOLVED OXYGEN | The daily average DO content shall not be less than 6.0 milligrams per liter, nor shall the concentration as determined for any one sample be less than 4.0 milligrams per liter. |
| DISSOLVED ORGANICS | Limited to the extent necessary to prevent detectable off-flavor in the flesh of fish or the development of slimes or other nuisance growths as the result of industrial or domestic wastes. |

| | |
|---|---|
| SOLIDS (Suspended and Floating) | Limited to the extent necessary to prevent the formation of deposits of either industrial or domestic waste origin on the bed, banks or surface of the stream. |
| COLOR AND TURBIDITY | Not offensive in appearance or otherwise unattractive as the result of wastes of industrial or domestic origin. |
| OILS AND GREASES | No visible film of oil or globules of grease. |
| TEMPERATURE | Stream temperatures, as a result of domestic or industrial waste discharges, shall not be increased more than 10° F above the ambient stream temperature, nor exceed a maximum of 85° F. |
| CHLORIDES | Average annual chloride ion concentration shall not exceed 125 milligrams per liter, nor shall the |

| | |
|---|---|
| | maximum concentration for any sample be in excess of 250 milligrams per liter. |
| PHENOLS | Less than 5.0 micrograms per liter (μg/l). |
| pH | Not less than 6.5 nor more than 8.8. |
| PHOSPHATES | Limited to the extent necessary to prevent stimulation of nuisance growths of algae and weeds. |
| CYANIDE (as CN) | Less than 0.025 milligrams per liter. |
| CHROMIUM (as Cr) (hexavalent and trivalent) | Less than 0.05 milligrams per liter. |
| COPPER ( as Cu) | Less than 0.1 milligram per liter. |
| ZINC (as Zn) | Less than 0.2 milligrams per liter. |
| IRON (as Fe) | Less than 0.3 milligrams per liter. |

| | |
|---|---|
| CADMIUM (as Cd) | Less than 0.05 milligrams per liter. |
| NICKEL (as Ni) | None detectable. |
| OTHER CONSTITUENTS | Shall not contain other substances which are or may become injurious to the uses set forth in Section 6 of P. A. 245, of 1929, as amended. |

# WATER USES

# of

# MICHIGAN - OHIO

# INTERSTATE WATERCOURSES

Water quality criteria are provided for the purpose of protecting and enhancing the following values and uses of Michigan-Ohio Interstate waters and portions thereof:

| PRESENT AND POTENTIAL WATER USES | West Branch St. Joseph River | East Branch St. Joseph River | Bean Creek |
|---|---|---|---|
| 1. Partial body contact recreation | X | X | X |
| 2. Total body contact recreation | | | |
| 3. Fish and aquatic life | X | X | X |
| 4. Wildlife | X | X | X |
| 5. Livestock watering | X | X | X |
| 6. Industrial process uses and cooling and condenser use | | | X |
| 7. Irrigation | X | X | X |
| 8. Domestic water supply | | | |
| 9. Waste water assimilation | X | | X |
| 10. Aesthetic value | X | X | X |

## LISTING OF MICHIGAN - OHIO

## INTERSTATE WATERCOURSES

The following is a listing of interstate watercourses at the Michigan-Ohio boundary as identified by name on quadrangle maps edited and published by the U. S. Geological Survey, for which interstate water quality criteria are to apply. Intermittent watercourses such as ditches and drains and small streams with drainage areas of less than 30 square miles are not listed below.

| | | | Location at Michigan Boundary | | | |
|---|---|---|---|---|---|---|
| | | | | Public Land Survey | | |
| Watercourse | Flow Direction (to) | Tributary (to) | Civil Unit (Twp.) | Section | Town | Range |
| BRANCH COUNTY | | | | | | |
| 1. No streams of significant Michigan drainage area. | | | | | | |
| HILLSDALE COUNTY | | | | | | |
| 1. W. Br. St. Joseph River<br>(Michigan drainage area at boundary equals 90 square miles) | Ohio | Nettle Creek | Camden | 10 | T.9S. | R.4W. |
| 2. E. Br. St. Joseph River<br>(Michigan drainage area at boundary equals 88 square miles) | Ohio | Maumee River | Amboy | 12 | T.9S. | R.2W. |
| LENAWEE COUNTY | | | | | | |
| 1. Bean Creek<br>(Michigan drainage area at boundary equals 201 square miles) | Ohio | Tiffin River | Seneca | 7 | T.8S. | R.2E. |
| MONROE COUNTY | | | | | | |
| 1. No streams of significant Michigan drainage area. | | | | | | |

These water quality criteria shall become effective on January 1, 1968, providing they have been approved by the appropriate Federal agency.

The Commission will maintain a program of periodic stream sampling and in the event it is determined that water quality in any of these streams at the Michigan-Ohio boundary does not conform to these criteria, the Water Resources Commission will thereafter implement the criteria by initiating statutory proceedings against the industries or governmental units whose wastes are causing the non-conformance. This would entail for each such industry or governmental unit:

a. Notice of Determination and Hearing on proposed form of Order

b. Hearing

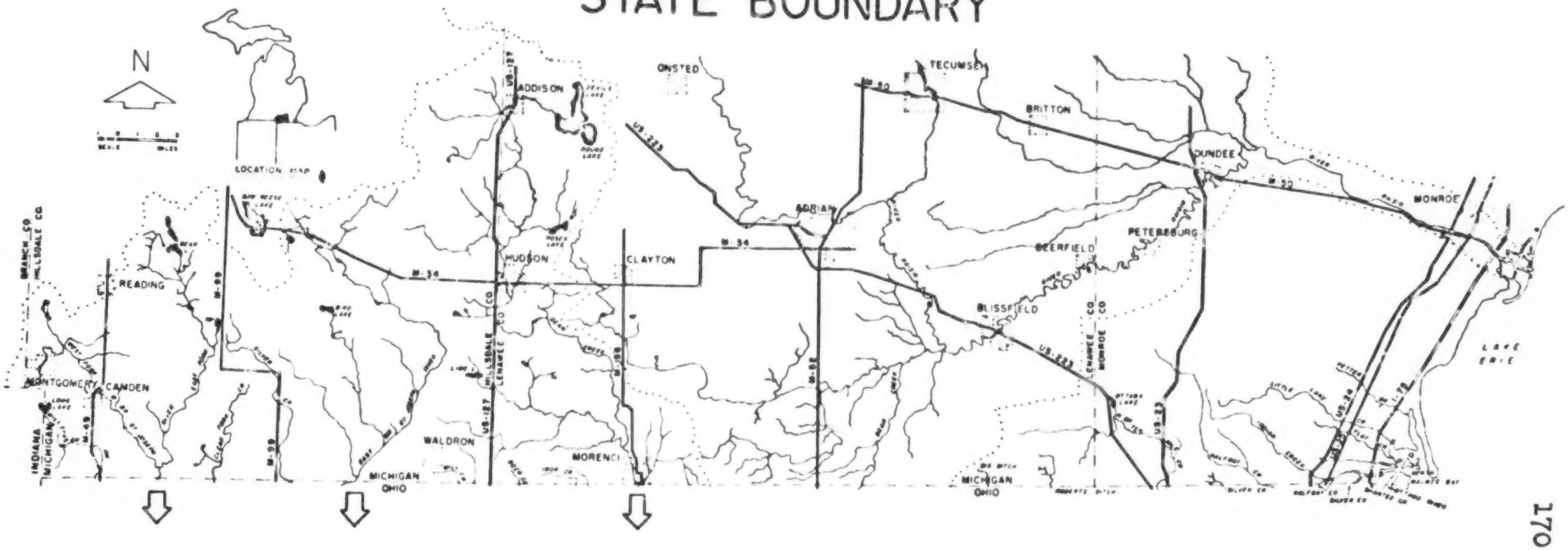
c. Final Order of Determination

d. Court review, if invoked by recipient of Order

e. Court enforcement at Commission's order on request for non-compliance.

# MICHIGAN WATER RESOURCES COMMISSION

# INTERSTATE WATERCOURSES
# AT
# MICHIGAN – OHIO
# STATE BOUNDARY


N
SCALE MILES
LOCATION MAP
BRANCH CO
HILLSDALE CO
INDIANA
MICHIGAN
MONTGOMERY
CAMDEN
READING
M-49
M-99
ADDISON
US-127
HUDSON
M-34
HILLSDALE CO
LENAWEE CO
WALDRON
MICHIGAN
OHIO
CLAYTON
M-156
MORENCI
ONSTED
US-223
ADRIAN
M-52
TECUMSEH
M-50
BRITTON
BLISSFIELD
DEERFIELD
PETERSBURG
LENAWEE CO
MONROE CO
US-23
MICHIGAN
OHIO
DUNDEE
MONROE
US-24
I-75
LAKE ERIE

# ACT 87 OF THE PUBLIC ACTS OF 1965

and

# REGULATIONS GOVERNING SOLID WASTE DISPOSAL AREAS

****

This Act and these Regulations establish minimum requirements for solid waste disposal areas.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
LANSING, MICHIGAN

# ACT 87

# OF THE PUBLIC ACTS OF 1965

AN ACT to license and regulate garbage and refuse disposal; and to provide a penalty for violation of this act.

THE PEOPLE OF THE STATE OF MICHIGAN ENACT:

Sec. 1. As used in this act:

(a) "Refuse" means putrescible and nonputrescible solid wastes, except body wastes, and includes garbage, rubbish, ashes, incinerator ash, incinerator residue, street cleanings and solid market and industrial wastes.

(b) "Garbage" means rejected food wastes including waste accumulation of animal, fruit or vegetable matter used or intended for food or that attend the preparation, use, cooking, dealing in or storing of meat, fish, fowl, fruit or vegetable.

(c) "Rubbish" means nonputrescible solid wastes, excluding ashes, consisting of both combustible and noncombustible wastes, such as paper, cardboard, tin cans, yard clippings, wood, glass, bedding, crockery, or litter of any kind that will be a detriment to the public health and safety.

(d) "Ashes" means the residue from the burning of wood, coal, coke or other combustible materials.

(e) "Commissioner" means the state health commissioner.

(f) "Health Officer" means a full time administrative officer of an approved city, county or district department of health.

(g) Applicant means individuals, firms, corporations or any political subdivisions of the state including any governmental authority created by statute.

Sec. 2. No person shall dispose of any refuse at any place except a disposal area licensed as provided in this act. Nothing in this act nor any act of the commissioner's shall usurp the legal right of a local governing body from developing and enforcing local ordinances, codes, or rules and regulations on solid waste disposal equal to or more stringent than the provisions of this act, nor will this act relieve the applicant for license to operate a disposal area from obtaining a license from a local governing body when required or relieve the person owning or operating a disposal area from responsibility for securing proper zoning permits or complying with all applicable local ordinances, codes, or rules and regulations not in conflict with this act.

Sec. 3. (1) A person, partnership, corporation, governmental unit or agency thereof desiring a license to operate a disposal area shall make application therefor each year to the commissioner through the health officer on a form provided by the commissioner. Where the disposal area is located in a county or city not having a full time organized local health department, the application shall be made directly to the commissioner.

(2) The application shall contain the name and residence of the applicant, the location of the proposed disposal area, and such other information as may be necessary. The application shall be accompanied by a fee of $25.00, except that governments and agencies thereof are exempt from payment of the fee.

(3) Fees collected by the health officer shall be deposited with the city or county treasurer, who shall keep the deposits in a special fund designated for use in carrying out the purposes of this act. If there is an ordinance or regulation prohibiting a city board of health or health officer from maintaining any such special fund, the fees shall be deposited and used in accordance with the ordinance and regulations. Fees collected by the commissioner shall be deposited in the state treasury to the credit of the general fund.

Sec. 4. (1) Upon receipt of the application the commissioner or health officer or their representatives shall inspect the proposed site and determine if the proposed operation complies with this act and the rules and regulations adopted pursuant thereto.

(2) If the inspection discloses that the disposal area and the proposed operation thereof comply with this act and the rules and regulations adopted hereunder, and the commissioner or health officer finds that the applicant is a responsible and suitable person to conduct the business, the commissioner shall issue a license to the applicant upon filing by the applicant with the commissioner a performance bond in an amount equal to $500.00 per acre of disposal area, but not less than $2,500.00.

(3) Licenses shall expire on September 1 following the date of issuance but may be renewed upon payment of an annual fee of $25.00 if the licensee has complied with the act and the rules and regulations adopted hereunder.

Sec. 5. The commissioner may revoke a license, after reasonable notice and hearing if he finds that the disposal area is not operated in accordance with this act and the rules and regulations adopted hereunder.

Sec. 6. The commissioner shall promulgate rules and regulations which shall contain sanitary standards for disposal areas and otherwise implement this act. The rules shall be promulgated in accordance with the provisions of Act No. 88 of the Public Acts of 1943, as amended, being sections 24.71 to 24.80 of the Compiled Laws of 1948, and subject to Act No. 197 of the Public Acts of 1952, as amended, being sections 24.101 to 24.110 of the Compiled Laws of 1948. The commissioner or health officer shall periodically inspect all licensed disposal areas and enforce this act.

Sec. 7. This act does not prohibit a person from disposing of refuse from his own household upon his own land as long as such disposal does not create a nuisance or hazard to health.

Sec. 8. Any person who violates any provisions of this act is guilty of a misdemeanor. Each day of the violation shall be considered a separate violation.

This Act is ordered to take immediate effect.

THIS ACT BECAME EFFECTIVE JUNE 28, 1965.

* * * * *

## DEPARTMENT OF PUBLIC HEALTH
## DIVISION OF ENGINEERING
## REGULATIONS GOVERNING SOLID WASTE DISPOSAL AREAS

(Filed with Secretary of State, November 23, 1965)
Published in Supplement No. 45, 1954 Administrative Code

(By authority conferred on the department of public health by section 6 of Act No. 87 of the Public Acts of 1965, being section 325.296 of the Compiled Laws of 1948, and by section 7 of Act No. 146 of the Public Acts of 1919, as amended, being section 325.7 of the Compiled Laws of 1948.)

R 325.1101. Definitions.

Rule 1. As used in these rules:

(a) "Cell" means compacted refuse completely enveloped by cover material.

(b) "Central garbage grinding" means the grinding by mechanical means of garbage accumulated by municipal, commercial or private delivery vehicles.

(c) "Director" means the director of the department of public health.

(d) "Disposal area" means a site, location, tract of land, area, building, structure or premise used or intended to be used for partial and/or total refuse disposal.

(e) "Ground water" means water in the ground that is in the zone of saturation.

(f) "Habitable building" means a structure or part thereof where persons live, sleep, reside or congregate.

(g) "Hazardous material" includes, but is not limited to, explosives, pathological wastes, radioactive materials and chemicals.

(h) "Health department" means an approved city, county or district health department, including the Michigan department of public health.

(i) "Open dump" means a site where refuse is dumped and which due to lack of control may create a breeding place for flies and rats, may catch fire or may produce air pollution.

(j) "Premises" means a tract or parcel of land with or without habitable buildings.

(k) "Salvaging" means the controlled removal of reusable materials.

(l) "Sanitary landfill" means a method of disposing of refuse on land without creating nuisances or hazards to public health or safety, by utilizing principles of engineering to confine the refuse to the smallest practical area, to reduce it to the smallest practical volume, and to cover it with a layer of suitable cover at the conclusion of each day's operation or at more frequent intervals as necessary.

(m) "Scavenging" means the uncontrolled picking of materials.

(n) "Surface water" means a body of water whose top surface is exposed to the atmosphere including a flowing body as well as a pond and a lake.

R 325.1102. General requirements for licensing.

Rule 2. Where refuse is removed from premises, to a location other than its point of origin, for disposal or where refuse is not removed from the premises but disposed at the point of origin in such quantities as to become of public health concern:

Plans and specifications.

(a) Refuse disposal facilities shall be designed in accordance with these rules by a registered professional engineer. Detailed plans, specifications, and necessary reports shall be submitted in triplicate to the health department having jurisdiction for review, approval and file. Alterations or deviations from these plans shall also be submitted for approval and file. In the development of the required plans and specifications for sanitary landfill, hog feeding and open dump operations when the health department, in their judgment, believe that technical problems will not be encountered, the services of a registered professional engineer may be waived.

Inspection and evaluation.

(b) The director or health department having jurisdiction shall make routine inspections and evaluations of solid waste disposal operations. A written notice of deficiencies, together with recommendations for their correction, shall be provided to the operator or the appropriate individual, firm, corporation, governmental unit or agency thereof responsible for the solid waste disposal operation.

### R 325.1103. Sanitary landfills; design.

#### Maps.

Rule 3. (1) The design of the sanitary landfill shall include 1 or more topographic maps at a scale of not over 100 feet to the inch with contour intervals which clearly show the character of land. These maps and accompanying data shall indicate the following: the proposed fill area; any borrow area; access roads; on-site roads; grades for proper drainage of each lift required and a typical cross-section of a lift; special drainage devices if necessary; fencing; structures on the site; existing and proposed utilities; and all other pertinent information to indicate clearly the soil characteristics, water table, orderly development, operation and completion of the sanitary landfill. A sanitary survey and a land use plan of the adjacent areas may be required.

#### Geology.

(2) The geological characteristics of the site shall be determined by on-site testing or from earlier reliable survey data to indicate soil conditions, water tables and subsurface characteristics.

Characteristics of cover material.

(3) Cover material shall be of such character that it can be compacted to provide a tight seal and shall be free of putrescible materials and large objects.

Water pollution and nuisance control.

(4) Sanitary landfill operations shall be so designed and operated that conditions of unlawful pollution will not be created and injury to ground and surface waters avoided which might interfere with legitimate water uses. Water-filled areas not directly connected to natural lakes, rivers or streams may be filled with specific inert material not detrimental to legitimate water uses and which will not create a nuisance or hazard to health. Special approval of the inert material to be used in this manner is required in writing from the health department having jurisdiction. Such approval shall be filed with the Director. Inert material shall not include residue from refuse incinerators, unless evidence, satisfactory

to the Director, is submitted by the licensee substantiating that such residue will not create a nuisance or hazard to health.

Equipment.

(5) Adequate numbers, types and sizes of properly maintained equipment shall be used in operating the landfill in accordance with good engineering practice and with these rules. Emergency equipment shall be available on the site or suitable arrangements made for such equipment from other sources during equipment breakdown or during peak loads.

R 325.1104. Sanitary landfills; preparation of the site.

On-site roads.

Rule 4. (1) On-site roads shall be designed and constructed so that traffic will flow smoothly and will not be interrupted by ordinary inclement weather.

Fire protection.

(2) Suitable measures shall be available to extinguish accidental fires.

R 325.1105. Sanitary landfills; operations.

Supervision of operation.

(Rule 5. (1) A landfill operation shall be under the direction of a responsible individual at all times.

Limited access.

(2) Access to a sanitary landfill shall be limited to those times when an attendant is on duty and only to those authorized to use the site for the disposal of refuse, except as otherwise approved in writing by the health department having jurisdiction and concurred in by the director. Access to the site shall be controlled by a suitable barrier.

Unloading of refuse.

(3) Unloading of refuse shall be continuously supervised, except as may be modified by Rule 5, paragraph (2).

Site maintenance.

(4) Measures shall be provided to control dust and blowing paper. The entire area shall be kept clean and orderly.

Spreading and compacting of refuse.

(5) Refuse shall be spread so that it can be compacted in layers not exceeding a depth of 2 ft. of compacted material. Large and bulky items, when not excluded from

the site, shall be disposed of in a manner approved by the health department.

Volumes of cells.

(6) Volumes of individual cells shall not exceed the daily quantity of wastes.

Daily cover.

(7) A compacted layer of at least 6 inches of suitable cover material shall be placed on all exposed refuse by the end of each working day. The placing of cover material may be modified in writing by the health department having jurisdiction when deemed necessary.

Final cover.

(8) A layer of suitable cover material compacted to a minimum thickness of 2 feet shall be placed over the entire surface of each portion of the final lift not later than 1 week following the placement of refuse within that portion.

Maintenance of cover.

(9) All daily cover depths must be continually maintained and final cover depths shall be maintained for a period of 2 years.

Hazardous materials, including liquids and sewage.

(10) Hazardous materials, including liquids and sewage, shall not be disposed of in a sanitary landfill unless special provisions are made for such disposal through the health department having jurisdiction. This provision in no way precludes the right of a landfill operator to exclude any materials as a part of his operational standards.

Burning.

(11) No garbage or refuse containing garbage shall be burned at a sanitary landfill. Burning of select materials shall be severely restricted and shall be conducted only in designated areas with the permission of the health department having jurisdiction and other appropriate authorities.

Salvage.

(12) Salvaging, if permitted, shall be organized so that it will not interfere with prompt sanitary disposal of refuse or create unsightliness or health hazards. This provision in no way precludes the right of a landfill operator to prevent salvaging as a part of his operational standards. Scavenging shall not be permitted.

Insect and rodent control.

(13) Conditions unfavorable for the production of

insects and rodents shall be maintained by carrying out routine landfill operations promptly in a systematic manner. Supplemental insect and rodent control measures shall be instituted whenever necessary.

Drainage of surface water.

(14) The entire site, including the fill surface, shall be graded and provided with drainage facilities to minimize runoff onto and into the fill, to prevent erosion or washing of the fill, to drain off rainwater falling on the fill, and to prevent the collection of standing water.

Completion of landfill.

(15) An inspection of the entire site shall be made by the health department having jurisdiction to determine compliance with approved plans and specifications before the earth-moving equipment is removed from the site. Any necessary corrective work shall be performed before the landfill project is accepted as completed. Arrangements shall be made for the repair of all cracked, eroded, and uneven areas in the final cover during the first 2 years following completion of the fill.

Modification of sanitary landfill rules.

(16) Modifications of the rules on sanitary landfills

as applicable to existing disposal areas may be made by the health department having jurisdiction. These modifications may continue in effect to May 31, 1968, providing the modifications are: approved in writing, supported by a comprehensive improvement plan, the modified operations are not a hazard to public health nor contribute to a nuisance and are concurred in by the director.

R.325.1106. Open dumps.

Rule 6. Open dumps shall not be permitted unless the location and specific method of operation has been approved in writing by the health department and concurred in by the director, and provided further that the isolation and operation and maintenance does not constitute a nuisance or hazard to health.

R 325.1107 Hog feeding.

Feeding area.

Rule 7. (1) Garbage, as defined in Act 87 Public Acts of 1965, when fed to hogs shall be fed on a readily cleanable impervious feeding area.

General area.

(2) The general area including cooking facilities,

when provided, shall be kept in a sanitary manner to prevent the attraction, harborage and breeding of insects and rodents and shall not create a nuisance.

Residue disposal.

(3) All residues resulting from the day's feeding operation shall be disposed of by a method approved by the health department having jurisdiction.

Garbage cooking.

(4) Garbage cooking operations licensed under Act No. 173 Public Acts of 1953 are exempt from the license provision of Act No. 87 Public Acts of 1965 but shall comply with all other applicable sections and these rules.

R 325.1108. Central garbage grinding.

Rule 8. Central garbage grinders receiving wastes categorized under introductory paragraph of Rule 2 shall be designed to provide reasonable safety for employees and to incorporate operating features which will assist in maintaining and operating the facility in a sanitary manner. The general sanitation in and around the central garbage grinder as well as the operational procedures employed shall be subject to the approval of the health department.

R 325.1109. Refuse burners.

Rule 9. Refuse burners receiving wastes categorized under introductory paragraph of Rule 2. shall be designed: to provide reasonable safety for employees, to incorporate operating features which will assist in maintaining and operating the facility in a sanitary manner and in accordance with Act No. 348 of the Public Acts of 1965 (the air pollution control act) and applicable local requirements. The general sanitation in and around the refuse burner as well as the operational procedures employed shall be subject to the approval of the health department.

R 325.1110. Other methods.

Rule 10. Any other method of solid waste disposal not covered by these rules shall be reviewed by the health department for the purposes of evaluating the design and operational methods with reference to: the nuisance factor, the safety of employees and the protection of the public health. Such disposal methods shall be subject to the evaluation and approval of the director.

MR. QUIGLEY: May I just make the comment that I think the report as written and presented is most encouraging. In fairness to the other conferees, who may come after you and may not have time to say quite as much or in as great detail, I think it should be noted, of course, that Detroit started on this particular assignment a little earlier than the rest of the States, as far as Federal enforcement action is concerned. However, regardless of when you started and regardless of how long it has taken, I think the report as submitted is an excellent progress report.

Let me just ask one question: The biggest municipality involved in this operation is the City of Detroit. What kind of treatment are we talking about for the city?

MR. PURDY: The specific requirement for the City of Detroit is shown in Appendix E. It sets forth that they shall control their load to a maximum of 206,000 pounds per day of five-day BOD; 324,000 pounds of suspended solids; 93 pounds of phenol; a coliform maximum of 1,000; for phosphates a minimum of 80% removal and a maximum of 21,000 pounds a day; and oil, a maximum of 15 milligrams per liter.

When this is related to the present waste load at Detroit, it means upwards of an immediate 80% or 75% reduction in BOD load, which, I believe, means secondary treatment.

MR. QUIGLEY: All right. Now let me ask you this: Has there been any further planning since the stipulations were agreed upon and the City of Detroit indicated its readiness to move towards compliance?

Has there been any discussion of the kind of money that is involved here for the City of Detroit to come up with the necessary secondary treatment?

MR. PURDY: Detroit has estimated that this is somewhat in excess of $100 million -- I believe exactly $104 million in the next four years' time.

The financing problem has not been completely solved as of this date.

MR. QUIGLEY: Do any of the other conferees have any questions or comments?

Yes, Mr. Oeming?

MR. OEMING: Mr. Chairman, I would like to point out here that in connection with this report, in the conferences that have been held on the Clinton River Basin, which is not exactly within the confines or the definition of this particular Meeting, the problem was identified as the Selfridge Air Force Base having inadequate collection and inadequate treatment of sewage.

This has been brought to the attention of the Regional Director of the Federal Water Pollution Control Administration, Mr. Poston, who sits as a conferee here. We had excellent response, at least insofar as a willingness to undertake correction of this problem, and we are hopeful that this will follow through so that the Federal establishment will provide the necessary facilities concurrent with other problems and solutions in the area.

MR. QUIGLEY: Thank you for bringing up that fact. Despite the fact that technically it might not fall within the purview of this Meeting, if it is a Federal installation and it is not doing what it ought to, this ought to be brought out. If it is doing what it ought to do, this ought to be brought out also.

As the Secretary pointed out, our own house has to be very much in order if we are going to give any kind of direction and guidance and leadership to the States, municipalities, and industries. We thoroughly have to be just a little bit like Caesar's wife.

MR. OEMING: Mr. Quigley, I also have another comment to make here. It was not brought out in Mr. Purdy's presentation, but we have attached to the report, for the benefit of the conferees, a copy of the Solid Wastes Disposal Act, which has just gone into effect, and which is now being administered to meet that provision in the summary and conclusions of the conference with respect to dumping materials into Lake Erie.

I want the record to show that the conferees, at least, have a copy of the Act, and the regulations that are being applied and have already been applied in the Raisin River area to regulate the discharge and dumping of materials that could get into the streams and the lake.

MR. POSTON: Mr. Chairman, in further reference to the Selfridge Air Force Base, it was indicated this is out of the area which we are discussing here today, but I would be the first to acknowledge that this has been a knotty problem with us. It is out of the area, and that is why we did not report on it.

However, Mr. Harlow is here today and, if you so desire, I would have him elaborate further on this problem, if you think that might be indicated.

SECRETARY UDALL: We are running into a time problem. Maybe this might fit in later.

R. W. Purdy

I want to make two or three observations of my own with regard to the Michigan report.

My technical people indicate that the type of standards that you have adopted are sound and good, and I think the general quickening pace of action, the picture presented here today, from my point of view, is satisfactory.

This Waste Disposal Act passed by the Legislature -- I have been looking at it here -- is a sound one. I wish all of our States had sound, strong laws in this field, and I will certainly be watching the way that it functions with great interest.

Up to this point, the American people have been a Nation of dumpers, of just littering the landscape, the old-fashioned city dump. I really can't think of anything that is more barbarous or outrageous.

On the trip which President Johnson sent me last March to West Germany, I ran into a very interesting approach that the City of Munich is using. As you probably know, it is one of the largest cities of Western Europe.

They tell me they have a somewhat different type of garbage and refuse, a little more inflammable, but there the city garbage is collected; it is taken out to a new electric power station that burns two-thirds coal and one-third garbage, and it is entirely consumed.

What emerges out of this is a little bale of metal, the "Goldfinger-type" bale of metal, that is then sent off and sold to the scrap processors. The garbage is actually burned to produce electric power. They have no city garbage dump, in other words.

However, the thing that distresses me as a conservationist is that if we continue another hundred years the dumping practices, the whole country will come to be a dump. All the beautiful stream valleys and riverfront areas -- I mean, dumping can be used at times to create land, and even to create parks -- will be dumps. Much of the American dumping practice I think does us more discredit as a people than almost anything that we have done. I think this type of statute is overdue and is sound, and I certainly want to applaud it.

I wanted to make one other observation here. I wish I had time -- I have a schedule to go on this river trip -- to hear the Ohio presentation in particular. One thing that does concern us a great deal in Washington is the new pattern of cooperation and action that is emerging. I think we are in a very critical period now. Of course, what President Johnson has proposed in this clean rivers and clean waters legislation is for the Federal Government to play a larger role in terms of monetary contribution, 30 percent or more, if the people who share a common lake or a common river or the States and the communities will get together and develop a clean-up program. This is the essence of the present approach.

It also is obvious to most of us that we are going to get the job done faster when the State participates the way that New York State is participating -- where the State will put up 30 percent of the money.

I noticed in the New York Times last week that the Wisconsin Legislature passed a new program where they are providing tax incentives and providing loans.

It does seem to me that for really quick action, we have to give the cities more help.

I would like to hope that the States bordering on Lake Erie will all participate in some manner. I noticed Governor Rhodes' announcement in the press earlier in Cincinnati at the Governors' Conference with regard to what Ohio is proposing. He referred in his statement to 412 municipal sewage treatment plants serving a population of seven million and a 1970 goal for most of this action. There was a total price tage of something in the order of, well, one billion dollars.

I think again we have a picture of action here, but the one thing that is missing to me is that there is no State action. The Governor is announcing what the municipalities and industries are doing, but he is not announcing anything that the State is doing.

It seems to me that the best way to help all of our municipalities move rapidly is for the Federal Government to make a larger contribution in terms of money and for the States to make a contribution -- whether the New York State formula of 30-30-40 is correct, or whether some other formula is correct.

It seems to me that in order to lick this big backlog, we are going to need not only strong State leadership in terms of enforcement of the type we have had pictured here this morning, but I think the States are going to have to get into business. Again, it can be done on a bond issue basis of helping move in aggressively and tackling this backlog problem.

The great thing about using the bond approach with regard to water clean-up, it seems to me, is that we are essentially then letting the people who are going to benefit from the clean-up and are going to achieve the human advantage ultimately from having clean lakes and clean rivers, help pay it off. That, I think, is sound politically from the standpoint of carrying out an action program of this kind.

So I think certainly, from the standpoint of what was being done a year ago in all of these States, we can already see a new action pattern -- a much more aggressive approach.

I commend this, and I commend the State of Michigan for the report, but I still think that there is a bigger job to be done, and that we can do more.

MR. TEATER: Mr. Chairman, may I respond briefly to that comment, please?

Today, in Columbus, there is a meeting of the Ohio Water Commission and its 115-man advisory council, which is made up of members of industry, municipal water supply and public interests, to develop a program for complete water management for Ohio based upon a request by the Governor to come up with a plan to be presented to the next General Assembly for complete water management, including not only pollution control, but water development for water supplies, recreation, flow augmentation, and so forth.

This meeting in Columbus is the first of a series which will be developing a water plan for complete water management in Ohio to include, as the Governor gave them the job, not only organization changes that might be necessary in Ohio, but also legislation and financing to finance a complete water development plan for the State, not overlooking the needs for water supply for industry and recreation and municipal use, including, as the Secretary suggested very ably, a plan for complete financing of the job which is ahead of us.

Thank you.

(Applause.)

MR. OEMING: Mr. Chairman, I think you raised a question here that I should comment on about this financing situation.

Governor Romney recommended to the Legislature some statutes that would extend the grants that are now provided by the Federal Water Pollution Control Administration. The Legislature is meeting today on a statute which will appropriate funds to supplement the Federal grant funds -- not a matching program, but a supplemental program -- and this is the first start in Michigan in this kind of a financing arrangement.

I suspect that it will pass. There is quite a lot of push behind it.

SECRETARY UDALL: I am trying to be constructive, and I think I am getting constructive responses. Because Wisconsin and New York anchor on different ends of the Great Lakes, I have been asking myself a question. I don't think that either State is any more enlightened or forward-looking than the rest of the States. If these two States feel that they should play a more aggressive role, then it seems to me the other States might well join in asking themselves whether they can move more rapidly and whether increased State participation won't be able to help the cities lick their backlog problem faster.

Maybe I have been talking too much lately to some of the mayors of big cities, and hearing of their woes, but my desire, and I think the desire of the people, is to get the clean-up program under way as quickly as possible. I suspect that if the States lead out on this in a very vigorous way, that you are going to find that it is not only good stewardship, but it is good politics.

Governor Rockefeller's program -- and I don't normally go around the country boosting Republican governors -- (Laughter) -- but Governor Rockefeller's program that a Democratic State legislature a year ago passed unanimously was on the ballot last November and passed by four to one. The people of the State of New York were asked this question, just quite bluntly: "Do you want to clean up the rivers of this State at a cost of one billion dollars?" And they answered, by a four to one vote, "yes."

I think that if we give you the right support and help present this, that you would get the same answer in the other States.

So I am trying to say this not critically, but I am trying to say it constructively.

MR. POOLE: May I say something?

SECRETARY UDALL: Yes.

MR. POOLE: I would like to report for the State of Indiana, Mr. Secretary, that the Indiana Stream Pollution Control Board has recommended to the 1967 legislature that the State provide a 30% matching grant to go along with the Federal funds. This has the support of Governor Branigin.

I would not want to forecast at this moment what the 1967 legislature will do, but I am hopeful that it will look at it favorably.

SECRETARY UDALL: Maybe I should come over and give them a speech.

MR. POOLE: I may want you to.

MR. LYON: Mr. Secretary, speaking for Pennsylvania, I would like to say that Pennsylvania has had a State grants program since 1956, making grants to municipalities, and that Governor Scranton just to this legislature proposed a constitutional amendment to increase the capacity of the State by a half a billion dollars for a land conservation fund. This has already passed the Senate, and hopefully will pass the House.

The chairman of our board just last week recommended another act that will establish watershed authorities with State financing to further enhance our clean-up program.

SECRETARY UDALL: Our trip on the sweet waters of the Cuyahoga is already fifteen minutes late.

If it is all right with the rest of the conferees, we will adjourn at this time until 2:30.

Thank you all for coming.

(Whereupon, at 11:45 a.m., a recess was taken until 2:30 p.m. of the same day.)

## AFTERNOON SESSION

(2:30 p.m.)

MR. STEIN: May we reconvene?

May we hear from Ohio?

## STATEMENT OF DR. E. W. ARNOLD, DIRECTOR, OHIO DEPARTMENT OF HEALTH

DR. ARNOLD: Mr. Quigley, Mr. Stein, Conferees, Participants Ladies and Gentlemen:

The Ohio conferees were very pleased with the results of the Conference or Pollution of Lake Erie last August. The accord reached by the conferees, representing five States and the Federal Government, presented 27 recommendations and conclusions which have given us an outstanding and realistic program for cleaning up this vital body of water.

We feel further that our meeting today should mark another milestone in this program, with a presentation of schedules for necessary remedial action to protect the lake.

Although there was a delay of three months last fall when the Federal Water Pollution Control Agency reviewed the recommendations before issuing the final official summary of the conference, Ohio took immediate action to implement its part of the agreed to program.

In September 1965, less than a month after the final session of the conference, the Ohio Water Pollution Control Board began a series of meetings with the representatives of industries and municipalities where pollution control improvements would be needed. These meetings continued each succeeding month. The municipalities and industries were informed of the new and stricter requirements for pollution control and were put on record with an official time schedule for the installation of the improvements.

At its October meeting, the Ohio Water Pollution Control Board issued a ban on any further construction of combined storm and sanitary sewers. This is in line with one of the very important recommendations of the conference.

The Ohio Water Pollution Control Board also informed municipalities which now have only primary sewage treatment that they would need to improve or provide secondary treatment. It might be pointed out that we are talking about only 21 percent of the approximately three million urban population of Ohio's share of the Lake Erie Basin. The other 79 percent in Ohio already has secondary sewage treatment facilities.

E. W. Arnold

Actually, much of the fine value of the Lake Erie Conference is being extended to all of Ohio, because the Ohio Water Pollution Control Board chose to make its ban on combined sewers a statewide ban, and is informing municipalities throughout the State that all existing primary sewage treatment plants must be stepped up to secondary treatment. There is agreement that no more primary sewage treatment plants will be allowed in Ohio. And even beyond this, a number of the larger cities on small streams are now under orders to provide facilities for tertiary treatment.

Ohio has been working hard at its pollution problem. The heavy population density of Ohio and the large number of city-sized municipalities makes it a big problem. On a statewide basis -- Ohio River Watershed as well as Lake Erie Basin -- Ohio has a total of 412 municipal type sewage treatment plants. At the present time, 293 of these are secondary treatment plants serving a population of 4,866,000 and 119 are primary plants serving a population of 2,253,911. This is virtually all of Ohio's urban population. The remaining Ohioans live on farms or in small villages.

Improvements now scheduled in Ohio for both the Lake Erie Basin and for the rest of the State amount to more than a billion dollars. More than $413 million of this is for additional municipal and industrial waste treatment facilities in the Lake Erie area. Added to this would be another $100 million which it is expected will be needed for additional population growth and industrial expansion during the period of constructing improvements.

This is a monumental program and Ohio is prepared to carry it out.

Our engineering staff has prepared a complete and detailed report on our schedules.

We are pleased to present these.

We, of course, also are interested in hearing the reports from the other States of the Lake Erie area, because we are well aware that cleaning up Lake Erie calls for more than the action of one State. It needs interstate and even international cooperation, as Governor Rhodes of Ohio said last year when he made the official request that brought this very conference that we are having today into being.

And now, I should like to introduce Mr. George Eagle, Chief Engineer of the Ohio Department of Health and one of the official conferees for our State. He will present a brief narrative summary of the detailed report for Ohio.

Thank you.

## STATEMENT OF GEORGE EAGLE, CHIEF ENGINEER, OHIO DEPARTMENT OF HEALTH, COLUMBUS, OHIO

MR. EAGLE: Mr. Quigley, Mr. Stein, fellow Conferees, and Ladies and Gentlemen:

I am not going to read all this report. This report is divided into --

MR. STEIN: Mr. Eagle, do you want this report in the record as if read?

MR. EAGLE: Yes, I want the complete report in the record.

MR. STEIN: All right. Without objection, that will be done.

MR. EAGLE: This report is divided into parts or items as they appear in the recommendations and conclusions of the conferees (See Appendix III).

Data and comments are submitted on each item which the Ohio conferees understand to be a responsibility of the State of Ohio to carrv out.

With regard to Items 7 and 8 -- secondary treatment and removal of phosphates: The details regarding the status of municipal and county waste treatment facilities and additional needs for compliance with the conference recommendations and conclusions are included under Item 22, which is the schedules of remedial actions.

In general, the Ohio Water Pollution Control Board is requiring that all sewage in the Lake Erie Basin be given secondary treatment. Dr. Arnold already mentioned that. Conditions for permit renewals issued after September 1, 1965, and to date, so stipulate. All others not in full compliance have been notified by letter from the Ohio Water Pollution Control Board that design and construction schedules for required secondary treatment must be submitted. Future permit renewals will verify schedules and order compliance.

The officials of all major existing secondary waste treatment plants are studying the phosphate problem, i.e., making regular analyses for phosphates of influent and effluent samples, evaluating removals with respect to their operating procedures, in some instances doing pilot and/or experimental studies, and in general trying to work out ways and means of maximizing phosphate reductions.

Many more such studies are expected to be initiated in the near future. Competent personnel and necessary laboratory facilities are problems in this regard.

Now, with regard to 9 -- disinfection of municipal waste effluents: Rarely do monthly average values for coliform concentrations exceed 5,000 organisms per 100 ml at the water supply intakes in Lake Erie, according to reports received in the Ohio Department of Health from the water plant operators each month. Investigations and studies are under way to determine the causes of these occasionally high counts. Necessary steps will be taken to correct them.

There are 19 municipal and county waste treatment facilities discharging directly, or nearly directly, to Lake Erie. All have taken steps to maximize their present treatment facilities and according to reports submitted to the Ohio Department of Health, all are chlorinating their effluents. Of course, higher disinfection efficiencies will be effected when secondary treatment facilities have been completed.

Several local agencies are making continuing bathing beach bacteriological studies. This information will be helpful in the surveillance program.

Item 10, with regard to bypassing untreated waters: All plans are carefully checked to insure a minimum of infiltration into sewers and the misuse of sanitary sewerage systems for carrying of roof, storm and other such clear waters. Bypassing arrangements are critically reviewed. In some instances, larger design capacities are being required to eliminate the necessity of frequent bypassing.

Item 11, with regard to combined sewers: Under date of October 1, 1965, the Division of Engineering of the Ohio Department of Health issued the following directive:

> "The recent conference on pollution of Lake Erie and its tributaries held in Cleveland, Ohio, and Buffalo, New York, August 3-12, 1965, further confirmed a general policy of the Ohio Department of Health of several years standing. The conferees agreed that,
>
> > "Combined storm and sanitary sewers be prohibited in all newly developed areas, and eliminated in existing areas wherever feasible."
>
> "Newly developed areas are construed to mean unsewered areas and areas redeveloped through urban renewal of other similar programs.
>
> "Effective this date, the Ohio Department of Health will require:
>
> (1) All plumbing plans submitted for approval under

the provisions of Sec. 3703.03 of the Revised Code include a separate 'building drain' for sewage and a separate 'building storm drain.'

'Combined building drains' will not be approved.

(2) Sewerage plans submitted for approval under provisions of Sec. 3701.18, of the Revised Code, shall propose separate sanitary and storm sewers for all newly developed areas, for redeveloped areas and for all other areas where deemed practicable.

Municipalities and sewer districts now served by combined sewers shall have a general plan of separate sanitary and storm sewers for the entire area. All new construction shall conform to the general plan; and

(3) Future permits issued by the Ohio Water Pollution Control Board under provisions of Secs. 6111.01 through 6111.08, of the Revised Code, shall require existing combined sewer systems to be regularly inspected and flow-regulating structures set so as to minimize pollution of receiving waterways."

This directive has been strictly enforced and has resulted in forcing changes from combined to separate sewers in a number of plans submitted for approval.

All major cities, notably Cleveland, Akron and Toledo, are carrying out extensive combined sewer overflow surveillance programs. Also they plan to extend and improve such programs. Further, these municipalities and some 20 others are studying their combined sewers, and in some instances the sanitary sewer systems carrying excessive infiltration, and they are developing plans for their elimination and/or improvement. Cleveland, for example, is proposing three new express trunk sewers that will carry the sanitary sewage from the suburbs direct to the treatment plants rather than to existing overloaded combined sewers. These express sewers are estimated to cost $20,500,000 and are expected to be completed in four to five years.

The conferees may be assured that the Ohio Department of Health and the Ohio Water Pollution Control Board will vigorously follow through on the correction of the combined sewer problem. Almost all municipal and county sewage collection systems need improvement to eliminate and prevent pollution and local nuisances.

Items 12 and 13 on accidental spills: A report on these items is included in the Item 17 report.

G. Eagle

Item 14 -- disposal of refuse: Ohio's report on Item 14, in the matter of prohibiting the disposal of garbage, trash and other deleterious refuse in Lake Erie or its tributaries, is best covered by quoting a news release issued by Governor James A. Rhodes under date of June 8, 1966:

> "Governor James A. Rhodes today took steps to strengthen Ohio's laws against dumping debris in rivers and streams. He asked Natural Resources Director Fred E. Morr to prepare legislation for consideration by the Ohio General Assembly in 1967.
>
> "Pointing out that statewide control of anti-debris dumping malpractices is necessary, Governor Rhodes said strong anti-water littering legislation is as necessary as our present laws against highway littering.
>
> " Conservation of the usefulness and beauty of our streams is important, said Governor Rhodes. 'Streams littered and clogged with debris lose their value for outdoor recreation. People do not enjoy fishing, swimming, boating or hiking along streams strewn with litter,' he said. 'Furthermore, certain types of debris dumped into streams causes

flooding when the streams peak and the debris piles in areas along the stream.

"'Stream and river littering is not only unsightly but expensive, he said. 'Recently the City of Cleveland was forced to appropriate thousands of dollars to police the river front and lake front areas. This is an unnecessary expense and the money could have been used somewhere else had the responsible parties for the debris been more considerate,' he said.

"In asking Director Morr to prepare strong legislation against stream and river littering, Governor Rhodes said:

"'The littering of our shores and the streams and rivers themselves must be prevented. We do not have at the present time adequate existing laws to solve this problem of desecration of the shores and flood plains of our rivers and streams.

"'Civil action by individuals to prevent littering of the shores of our streams and rivers is not the solution. The authority of local boards of health to prevent and enjoin nuisances is inadequate because there is no uniform application of this authority and the questionable extent of this authority to prevent or abate all the sources of pollution.

"'The solution to this problem will require an intensive educational program, the enactment of appropriate laws to prevent littering, dumping and operation of dumps and junk yards, and the prohibiting of the stock piling of industrial wastes along the shores and flood plains of our rivers and streams,' Governor Rhodes stated."

Further, in this regard, the Ohio Department of Health plans to recommend to Governor Rhodes state-wide legislation on solid wastes collection and disposal. Such legislation would require the provision of adequate approved solid wastes disposal facilities and the use of such facilities by all persons, agencies and industries.

Item 16 -- maximum reduction of certain industrial waste constituents: The maximum reduction of the polluting constituents listed in Item 16 are used as the criteria for determining the adequacy or inadequacy of waste treatment facilities reported in Item 22, Schedules of Remedial Actions.

Items 17 and 18 -- sampling and reporting of industrial waste discharges: The Ohio Department of Health has demanded, for the past ten years or more, that industry as well as municipalities and others immediately report spills that may seriously impair stream quality, and further, that immediate steps be taken to eliminate future spills. This program is constantly stressed not only by the Ohio Water Pollution Control Board but also by the Ohio Division of Wildlife. Ohio law requires polluters to pay for aquatic life damages.

Ohio has required regular sampling and analysis of major industrial discharges since the adoption of the State Water Pollution Control Law in 1951. Such programs are carried out reasonably well by industry. However, present-day considerations have revealed shortcomings in some of these programs, and more frequent sampling and more extensive analyses are being required. Many industries have already improved their programs; others are in the process of doing so. It is expected that full conformity with Item 17 will be attained in the next six months to a year; it takes time for industry to obtain necessary staff and to set up adequate laboratory facilities, and for State personnel to give the consultation which is needed to work out adequate sampling programs.

As to reporting, the vast majority of the industries are regularly reporting to the Ohio Department of Health their analytical results, and where the information can be obtained, they are reporting the flows at the points where the samples were collected. A few industries have not been regularly submitting their analytical and flow data to the State; however, they have made such data available to us upon request.

The Ohio Department of Health has under way a program for placing all waste water and stream data on data processing. We expect to publish this data periodically, at least once each year. All industries will be asked to submit their data to us for inclusion in these published reports. The reports will be made available to the public. We do not anticipate any difficulties in this regard. We expect to have this data processing program in full operation within the next year.

The Ohio Water Pollution Control Board has cooperated with the Lake Erie Field Station of the Federal Water Pollution Control Administration by furnishing them all of the Lake Erie Basin municipal, county, industrial and other analytical and flow data available in our files. In accordance with Ohio law, industries in the Maumee Basin were requested to give permission for release of their data. Most industries readily gave such permission. A few problems remain to be worked out. We hope to resolve these in the near future. Requests to industries in the other basins, for release of their data to the Federal Water Pollution Control Administration, will be made by the State as soon as staff time becomes available to do it. We anticipate no major difficulties with industries in releasing the necessary data to the Federal Water Pollution Control Administration.

It may be of interest to the conferees to know that the major industries, municipalities and counties in the Cuyahoga River Basin formed a committee about two years ago known as the Cuyahoga River Water Quality Committee.

The major functions of this committee are: (1) To determine existing river quality; (2) to determine the causes of changes in water quality; (3) to determine the treatment or control requirements necessary to upgrade and maintain water quality for all reasonable and legitimate uses; and, (4) to determine the cost of such requirements.

The committee is carrying on a very extensive sampling program in the Cuyahoga River. Individual municipalities and industries are furnishing waste load data to the committee. The committee expects to compile a report in the near future which will be made available to all interested agencies and persons. This committee is to be commended for their interest and efforts.

G. Eagle

Item 19, with regard to surveillance of tributaries to Lake Erie: The State of Ohio, by contract with the Water Quality Branch of the Geological Survey of the United States Department of the Interior, has established the following automatic monitoring stations:

Maumee River near Defiance -- DO, Conductivity, Temperature

Auglaize River near Defiance -- DO, Conductivity, Temperature

Maumee River at Waterville -- DO, Conductivity. Temperature, pH

Black River at Elyria -- DO, Conductivity, Temperature

Cuyahoga River at Independence -- DO, Conductivity, Temperature

Cuyahoga River at DuPont at Cleveland -- Conductivity

Cuyahoga River at Center Street at Cleveland -- DO, Conductivity, Temperature, pH

During fiscal year 1967, four parameter monitors (DO, Conductivity, Temperature, and pH) will be installed at four additional sites:

Grand River at Painesville

Sandusky River below Fremont

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Maumee River at the mouth

Auglaize River below the Ottawa River at
Cascade Park

The cooperative program between Ohio and the United States Geological Survey includes, in addition to the monitoring stations, the operation of three daily sampling stations -- Sandusky River at Fremont, Black River at Elyria, and Grand River at Painesville. A complete chemical analysis is made for the days of maximum and minimum conductance each month and analyses for dissolved oxygen, detergents, total phosphates, iron, and manganese are made monthly. A thermograph record is obtained for the Huron River at Milan.

In addition to the above, complete chemical analyses are obtained annually during low stream flow for about thirty (30) gauging stations on streams tributary to Lake Erie.

Item 22 -- schedules of remedial actions: The schedules of remedial actions in the Lake Erie Basin have been developed on an individual municipality, county, and industry basis by the Ohio Water Pollution Control Board. Many of the major permittees were called before the Board to explain in detail their programs and schedules for compliance with the recommendations and conclusions of the

G. Eagle

Lake Erie pollution conference; others were ordered by the Board to submit their proposals for compliance in writing, and the remainder of the permittees not in full compliance were contacted by the Ohio Department of Health staff. All permittees have either proposed or concurred in their respective programs and schedules.

You will note from the Summary Status (Appendix I) that a total of 180 municipalities and counties with more than 3 million people, and 191 industries, are included in this report. You will further note that about 47% of the municipalities and counties with about 2.2 million people and about 30% of the industries listed, do not fully comply with all of the treatment requirements set forth in the recommendations and conclusions of the conference.

These are considerably higher percentages with respect to inadequacy than indicated in Ohio's report to the conference in August 1965. This results, of course, from the upgrading of requirements by the conferees.

As to municipalities and counties, the status reports on municipalities and counties under this item are based on treatment requirements only. As required by Item 7, those not having secondary treatment for maximum removal of BOD and phosphates are listed as inadequate, while the municipalities and counties having complete secondary treatment facilities of adequate capacity are classified as adequate at this time (See Appendix II for details).

Of the 85 municipalities and counties having inadequate treatment facilities, the status with respect to compliance is as follows:

| | | |
|---|---|---|
| (1) | Studies. reports and general plans under way | 41 |
| (2) | Detail plans and financing programs under preparation | 24 |
| (3) | Under construction in 1966 | 20 |
| | TOTAL | 85 |

Estimated schedules for completion of construction of required treatment facilities:

| | |
|---|---|
| Completion in 1966 | 8 |
| Completion in 1967 | 12 |
| Completion in 1968 | 63 |
| Completion in 1970-71 | 2 |
| TOTAL | 85 |

The two treatment facilities scheduled for completion in 1970 and 1971 are at Cleveland and Akron. These existing secondary treatment facilities are being considerably enlarged and improved. These projects are planned, programmed and scheduled in detail by these two cities.

Industries

According to Item 16 requiring the maximum reductions of certain polluting constituents, 64 industrial establishments do not fully comply at this time (See Appendix II for details).

Of the 64 industries having inadequate treatment or control facilities, the status with respect to compliance is as follows:

| | | |
|---|---|---|
| (1) | Studies, reports, proposals and/or plans under way | 30 |
| (2) | Under construction in 1966 | 28 |
| (3) | Under construction in 1967 | 6 |
| | TOTAL | 64 |

Estimated schedules for completion of construction of required treatment or control facilities:

G. Eagle

| | |
|---|---|
| Completion in 1966 | 25 |
| Completion in 1967 | 30 |
| Completion in 1968 | 9 |
| TOTAL | 64 |

## Conclusion

In conclusion, Ohio has accomplished much since our meetings here in Cleveland and in Buffalo last August. We have made real progress toward the goals outlined in the conclusions and recommendations of those meetings. You may be assured that Ohio is pursuing this program with all possible diligence and will continue on this course until all of the goals have been reached.

# APPENDIX I

## SUMMARY STATUS
## WASTE TREATMENT FACILITIES
## LAKE ERIE DRAINAGE BASIN

## SUMMARY STATUS
## WASTE TREATMENT FACILITIES
## LAKE ERIE DRAINAGE BASIN

| Rec'g Stream | INDUSTRIES | | MUNICIPALITIES | | | | | | | | SEWER DIST. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cities | | | | Villages | | | | | |
| | Adeq. | Inad. | Adeq. | 1965 Pop. | Inad. | 1965 Pop. | Adeq. | 1965 Pop. | Inad. | 1965 Pop. | Adeq. | Inad. |
| Ashtabula River | 1 | 8 | - | - | - | - | - | - | - | - | - | - |
| Black River | 13 | 2 | 3 | 69,856 | 2 | 84,561 | 4 | 9,334 | - | - | 4 | - |
| Chagrin River | 5 | - | 2 | 7,781 | 1 | 4,725 | - | - | - | - | 2 | - |
| Cuyahoga River | 24 | 23 | 6 | 408,727 | 4 | 1,214,773 | 3 | 7,539 | 5 | 12,093 | 12 | 1 |
| Grand River | 4 | 4 | - | - | 1 | 17,689 | 2 | 5,674 | 3 | 5,567 | - | - |
| Huron River | 2 | 1 | 1 | 5,818 | 2 | 20,656 | 1 | 754 | 3 | 4,929 | - | - |
| Maumee River | 39 | 12 | 5 | 85,945 | 6 | 439,928 | 19 | 44,173 | 21 | 30,048 | - | - |
| Ottawa River (Tenmile Creek) | 1 | 1 | - | - | 1 | 7,650 | - | - | - | - | 3 | - |
| Portage River | 6 | 2 | 2 | 32,820 | 1 | 7,352 | 1 | 3,036 | 5 | 7,738 | - | - |
| Rocky River | 2 | - | 4 | 127,671 | 5 | 60,745 | - | - | 1 | 2,284 | 5 | 1 |
| Sandusky River | 6 | 1 | 2 | 19,571 | 2 | 42,533 | 2 | 9,108 | 3 | 2,793 | - | - |
| Vermilion River | - | - | - | - | 1 | 7,723 | 2 | 3,889 | - | - | - | - |
| Trib.to L.Erie | 17 | 6 | 2 | 14,716 | 3 | 38,371 | 3 | 7,667 | 3 | 5,598 | 2 | - |
| Direct to L.Erie | 7 | 4 | - | - | 6 | 186,965 | - | - | 2 | 986 | 2 | 4 |
| TOTALS | 127 | 64 | 27 | 772,905 | 35 | 2,133,671 | 37 | 91,174 | 46 | 72,036 | 30 | 6 |

# APPENDIX II

1. Municipal and County Waste Treatment Facilities
   (Including Water Pollution Control Board Permit Letters)

2. Industrial Waste Treatment Facilities
   (Including Water Pollution Control Board Permit Letters)

# STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES

## LAKE ERIE DRAINAGE AREA IN OHIO

## KEY TO ABBREVIATIONS

Treatment Facilities - Pr. = Primary

Int. = Intermediate

Sec. = Secondary

(EA = Extended Aeration
(AS = Activated Sludge Proc.
(TF = Trickling Filter
(San Filt = Sand Filters

Planning & Construction

RGP = Report & General Plan

DP = Detail Plans

UC = Under Construction

Sewerage

SSE = Sewer System Extension

SWEP = Storm Water Elimination Program

Treatment

WTPI = Wastewater Treatment Plant Improvements

MTP = Maximize Treatment Process

S. D. = Sewer District of County

Type Sewer System

S = Separate

C = Combined

Status

A = Adequate

I = Inadequate

STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
LAKE ERIE DRAINAGE AREA IN OHIO
BLACK RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities | | | | | | | | |
| Avon | 7,651 | French Crk | S - Sec.<br>800 PE | 1955 | I | Financ.Prog.<br>Det.Plans | -<br>12-15-66 | RGP approved. |
| Elyria | 50,307 | Black R. | S & C - Sec.<br>89,000 PE | '29,'63 | A | | | |
| Lorain | 76,910 | Black R. | S - Pr+D<br>100,000 PE | 1956 | I | RGP-SWTP | 9-15-66 | See Brd Ltr 11-10-65 |
| N.Ridgeville | 10,525 | Trib.of French Crk | S-Sec(4 Plts)<br>2,800 PE Est. | 1963 | A | Sewer ext.as pop.increases | | |
| Oberlin | 9,024 | Plum Crk | S - Sec.+ D<br>9,000 PE | '39,'59 | A | SWEP | Underway | |
| Villages | | | | | | | | |
| Grafton | 1,795 | E.Branch Black R. | S - Sec.<br>2,000 PE | 1957 | A | SWEP | Underway | |
| LaGrange | 1,175 | Trib.of Black R. | S - Sec.<br>1,600 PE | UC 1965 | A | | Complete 1966 | |
| Lodi | 2,506 | E.Branch Black R. | S - Sec.<br>2,500 PE | '54,'65 | A | | | |
| Wellington | 3,858 | Charlemont Crk, W.Br. Black R. | S - Sec.<br>2,500 PE | '39,'59 | A | SWEP | Underway | |

### STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
### LAKE ERIE DRAINAGE AREA IN OHIO
### BLACK RIVER BASIN - Contd.

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Sewer Districts | | | | | | | | |
| Lorain County | | | | | | | | |
| S.D. #9<br>Ridgeville Park | | Trib.of French Crk | S - Sec.+D 1,580 PE | 1961 | A | | | |
| S.D. #9<br>West Point Homes | | Trib's of French Crk | S - Sec.+D 1,300 PE | 1962-63 | A | | | |
| S.D. #30<br>Eaton Homes | | Co.Ditches to E.Br. | S - Sec.+D 2,000 PE | 1964 | A | | | |
| S.D. #59<br>Brentwood Lake | | Trib.of E.Branch | S - Sec.+D 1,300 PE | 1962 | A | | | |

Re: Lorain

Sewerage

November 10, 1965

Mayor and Council
City Hall
Lorain, Ohio

Gentlemen:

As a result of Board action November 9, 1965, enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the State" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires September 15, 1966. Renewal of this permit is contingent upon compliance with the following Orders:

1. Submit a summary report on findings of inspections and maintenance of intercepting and overflow devices on the sewerage system.
2. Submit with application for renewal of permit a report indicating any major sewer projects completed or placed under construction during the period of this permit.
3. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular

operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

4. Submit a report and general plan for compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 7, 8, 9, and 10 concerning the means to maximize the reduction of biochemical oxygen demand, phosphates, and coliform concentrations.

Should you have any questions with respect to the above Orders, please notify us promptly.

Yours very truly,

E. W. Arnold, M.D., Chairman

Water Pollution Control Board

Enc.-Permit 467.14
-Recom. & Concl.

Certified mail

cc: Mr. A. V. Agnew

cc: Health Commissioner

cc: District Office.

# STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
# LAKE ERIE DRAINAGE AREA IN OHIO
# CHAGRIN RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Villages | | | | | | | | |
| Aurora | 4,725 | Chagrin R. | S - Sec.<br>2,500 PE | 1928 | I | RGP - SWTP | 4-15-67 | |
| Chagrin Falls | 3,676 | Chagrin R. | S - Sec.<br>4,000 PE | 1956 | A | SWEP | Underway | |
| Pepper Pike | 4,105 | Trib.of Chagrin R. | S-Sec.+D(3 Plts)<br>2,400 PE | 1964 | A | | | |
| Sewer Districts | | | | | | | | |
| Geauga County | | | | | | | | |
| Chester Twp.SD #1 Chesterland Area | | Trib.of Chagrin R. | S - Sec.+D<br>800 PE | 1964 | A | | | |
| Chester Twp.SD #2 Willow Hills Ests. | | Caves Crk | S - Sec.<br>1,250 PE | 1965 | A | | | |

### STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
### LAKE ERIE DRAINAGE AREA IN OHIO
### CUYAHOGA RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities | | | | | | | | |
| Akron | 298,052 | Cuyahoga R. | S-Sec.+Prechl.<br>330,000 PE | '29,'57 | I | RGP - DP - Constr. | See Brd Ltr 11-10-65 | Phases I, II, III programmed. |
| Bedford | 16,873 | Tinkers Crk | S & C -Sec.+D<br>26,000 PE | '38,'54 | A | | | |
| Bedford Hts. | 9,011 | Bear & Tinkers Cr. | S - Sec. + D<br>10,000 PE | 1959 | A | | | |
| Cleveland | 858,823<br>+ 484,423<br>21 Trib.Munic's | | S & C | | | | | |
| | | Lake Erie | Easterly<br>Sec. + D<br>1,230,000 PE | 1938 | A | DP - WTPI | | See Brd Ltr 5-10-66 |
| | | Lake Erie | Westerly<br>Prim. + D<br>360,000 PE | '22,'57 | I | RGP - WTPI (Sec.) | 9-15-66 | |
| | | Cuyahoga R. | Southerly<br>Sec.<br>680,000 PE | '27,'38,'56 | I | Imprvts | UC | |
| Cuyahoga Falls | 52,703 | Kellsy Crk | S - Sec.+ D<br>640 PE | 1961 | A | | | Major part trib. to Akron. |
| Kent | 23,286 | Cuyahoga R. | S - Sec.+ D<br>53,000 PE | '54,'66 | I | Secondary Tr.Facils | UC<br>(In op.1967) | |
| Maple Heights | 34,612 | Swan Crk | S - Sec.+ D<br>10,000 PE | 1955 | I | New Tr.Plt | UC 8/66<br>(In op.1967) | 30,500 pop.trib.to Cleveland. |
| Ravenna | 11,365 | Breakneck Creek | S - Sec.<br>13,500 PE | '44,'56 | A | DP-Sludge Fac. Imprvts | 9-15-66 | |
| Solon | 8,032 | Trib.of Cuyahoga R. | S - Sec.+ D<br>7,000 PE<br>7,800 PE-New | 1962 | A | Sew.& Plt for N.E. Area. | UC-11-15-66 | See Brd Ltr 11-15-65 |

STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
LAKE ERIE DRAINAGE AREA IN OHIO
CUYAHOGA RIVER BASIN - Contd.

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities - contd. | | | | | | | | |
| Tallmadge | 12,691 | Trib.of Lt. Cuyahoga R. | S - Sec.<br>500 PE | 1962 | A | | | 70% trib.to Akron. |
| Villages | | | | | | | | |
| Burton | 1,132 | E.Branch | S - Sec.<br>600 PE | '27,'61 | A | | | |
| Hudson | 3,166 | Brandywine Creek | S - Sec.+ D<br>5,500 PE | 1962 | A | | | |
| Mantua | 1,239 | Cuyahoga R. | S - Sec.<br>1,000 PE | 1915 | I | DP - New WTP | 6-15-66<br>UC 4-15-67 | |
| Middlefield | 1,566 | Trib.of Cuyahoga R. | C - Pr.<br>1,800 PE | '54,'57 | I | RGP-New WTP | 6-14-66 | Order to Show Cause - Pub.Hearing 6-14-66. |
| Munroe Falls | 2,849 | Cuyahoga R. | -<br>2,849 PE | | I | Need sewers & connection. | | To be trib.Summit Co. Mud Brook Interc. |
| Northfield | 3.156 | Trib's of Cuyahoga R. | S - Sec.+ D<br>5,965 PE | '59,'65 | I | DP - WTPI | In Prep. | |
| Oakwood (Cuyahoga Co.) | 3,283 | Trib.to Tinkers Crk | S - Prim.<br>200 PE | 1940 | I | Engr.hired<br>RGP - WTP | In Prep. | Plant for small portion only. |
| Twinsburg | 3,241 | Tinkers Crk | S - Sec.<br>6,000 PE | 1957 | A | | | |
| Sewer Districts | | | | | | | | |
| Cuyahoga County | | | | | | | | |
| Seven Hills SD #2 Shar-Bon Plant | | Trib.of Cuyahoga R. | S - Sec.+ D<br>540 PE | 1962 | A | | | |
| Walton Hills SD #20 | | Trib.of Tinkers Crk | S - Sec.+ D<br>2.500 PE | 1955 | A | | | |

STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
LAKE ERIE DRAINAGE AREA IN OHIO
CUYAHOGA RIVER BASIN - Contd.

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Portage County | | | | | | | | |
| Brimfield S.D. #1 Beechcrest Allotments | | Plum Crk | S - Sec.+ D 2,000 PE | 1960 | A | | | |
| Gillie Estates Special S.D. | | Trib.of Tinkers Crk | S - Sec.+ D 4,440 PE | 1959-64 | A | | | |
| Rootstown S.D. #1 Baronwood Subdiv. | | Breakneck Creek | S - Sec.+ D 800 PE | 1960-64 | A | | | |
| Shalersville S.D. #1 Red Fox Estates | | Cuyahoga R. | S - Sec.+ D 1,600 PE | 1959 | A | | | |
| Streetsboro S.D. #3 Arrowhead Trails Allot. | | Trib.of Tinkers Crk | S - Sec.+ D 650 PE | 1961 | A | | | |
| Summit County | | | | | | | | |
| Northeast SD - Plant #1 Hyland Homes | | Trib.of Tinkers Crk | S - Sec. 1,000 PE | 1958 | A | | | |
| Northeast SD - Plant #6 Gen.Motors Plant | | Powers Crk Mud Brook | S - Sec. 2,000 PE | 1960 | A | | | |
| Northeast SD - Plant #15 Northfield-Macedonia | | Brandywine Creek | S - Sec. 10,000 PE | 1963 | A | | | |
| Stow Twp. SD - Plant #4 | | Cuyahoga R. | S - Sec. 2,000 PE | 1924 | I | Constr.of Interc.Proj.* | 8-9-66 | To take bids for constr. 8/66 |
| Stow Twp. SD - Plant #14 Renee Estates | | Trib.of Fish Crk | S - Sec. 1,000 PE | 1963 | A | | | |
| Stow Twp. SD - Plant #16 Silver Crest Estates | | Mud Brook | S - Sec. 5,750 PE | 1963-64 | A | | | |

* - Summit Co.-Mud Brook Interc.Proj.-Det.Plans apprvd & Fed.Grant Offer made.

Re: Akron

Sewerage

November 10, 1965

Mayor and Council
Municipal Building
Akron, Ohio 44308

Gentlemen:

As a result of Board action November 9, 1965, enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires September 15, 1966. Renewal of this permit is contingent upon compliance with the following Orders:

1. Complete detail plans, specifications, and financing for Phase I of proposed improvements to the wastewater treatment works and secure approval thereof by the Ohio Department of Health.
2. Place under construction Phase I of the proposed improvements to the wastewater treatment works.
3. Prepare detail plans and specifications and submit means of financing Phase II of the improvements program for the wastewater

treatment works, and secure approval thereof by the Ohio Department of Health.

4. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.
5. Submit a report and general plan for compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 7, 8, 9, 10, and 11 concerning the means to maximize the reduction of biochemical oxygen demand, phosphates, and coliform concentrations.

Should you have any questions with respect to the above Orders, please notify us promptly.

Yours very truly,

E. W. Arnold, M. D., Chairman

Water Pollution Control Board

Enc.-Permit 541.14

-Recom. & Concl.

Certified mail

cc: Dir. of Public Service

cc: Glaus, Pyle & Schomer

cc: Health Commissioner

cc: District Office

Phase I - Addition of Aeration and Final Settling Facilities, Blower Building and Miscellaneous Plant Modifications.

Completion of Final Plans and Specifications - December 1, 1965

Phase II - Addition of Preliminary (Grit Chambers and Screening Equipment) and Primary Facilities (Primary Sedimentation Tanks and Preservation Tanks), Grease Incineration.

Completion of Plans and Specifications - October 1, 1966

Phase III - Sludge Disposal Modifications and Modifications to Existing Secondary Facilities.

Completion of Plans and Specifications - October 1, 1967.

STATE OF OHIO

DEPARTMENT OF HEALTH

Water Pollution Control Board

May 10, 1966

Re: Cleveland

Sewerage

Mayor and Council
City Hall
Cleveland, Ohio 44114

Gentlemen:

As a result of Board action May 10, 1966, enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires April 15, 1967. Renewal of this permit is contingent upon compliance with the following Orders:

General.

1. Provide satisfactory operation and maintenance of all existing sewage pump stations, wastewater treatment works, and intercepting devices of the city of Cleveland, including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

2. Submit a progress report prior to January 1, 1967, on the status of the Master Plan Study of Pollution Abatement and the expected date for completion.

Wastewater Treatment Works.

1. Southerly Works.

   A. Continue construction on Contracts Nos. 130 (Imhoff Tank Conversion) and 131 (Elutriation Tanks) and submit a status report of such.

   B. Complete detail plans and specifications and secure approval thereof by the Ohio Department of Health for Contracts Nos. 134 (Primary Treatment Improvements) and 135 (Secondary Treatment Improvements) and place such under construction.

   C. Authorize the preparation of detail plans and specifications for Additional Improvements and Enlargements to existing facilities as outlined in February 1966 Report on Southerly Treatment Plant (references 11.4, 12.2, and 12.3).

2. Easterly Works.

   Prepare and secure approval by the Ohio Department of Health of detail plans for Construction

Packages Nos. 1 and 2 in accordance with February 1966 Plan for Improvements and Enlargements of the Easterly Sewage Treatment Plant (Part VIII, Table 6).

3. Westerly Works.

   A. Complete Engineering Study and Report to provide for secondary treatment facilities and submit such prior to September 15, 1966, for approval by the Ohio Department of Health.

   B. Submit a schedule as to when detail plans will be completed and construction will be undertaken, in accordance with the conclusions and recommendations of the above report.

Collection System.

1. Implement the "Improvements Recommended for Immediate Action" set forth in Part V of the Preliminary Survey of Water Pollution:

   A. Proceed immediately with the preparation of detail plans of (1) Heights Sanitary Trunk Sewer (A-1), (2) Broadway Sanitary Trunk Sewer (A-2), and (3) Southwest Suburban Sanitary Trunk Sewer (A-3), and submit a schedule for completion of plans and for construction of these trunk sewers.

B. Item D regarding the rehabilitation and repair of existing pumping stations and in addition automatic telemetering equipment for continued surveillance of operations of the pumping stations.

C. Item C regarding gauging and sampling stations.

D. Item E regarding sewer construction projects, plans for which have been prepared; in addition the establishment of priorities for construction of such projects during 1966-1971.

2. Submit a report on other major sewer projects completed, placed under construction, and planned for construction.

Please note that the reports referred to above should be submitted at times specified and that the application for renewal of permit should be submitted by March 15, 1967.

Specific attention should be directed to the real need for the City of Cleveland to provide monies on a continuing basis so that construction, operation, and maintenance can be provided to assure maximum abatement of pollution in the least amount of time. Only with assured and continued financing of this kind can the city be expected to implement a program of pollution abatement which the Board can consider satisfactory.

Yours very truly,

E. W. Arnold, M. D., Chairman

Water Pollution Control Board

Enc.-Permit 468.13

Certified mail

cc: Director of Law

cc: Commr. of Water Pollution Control

cc: Commr. of Engineering

cc: Health Commissioner

cc: District Office

The recommended Immediate Improvement Program contains the following items:

| | | Estimated Project Cost |
|---|---|---|
| A - New Trunk Sanitary Sewers | | |
| A-1 | Heights Sanitary Trunk Sewer Easterly | $10,100,000.00 |
| A-2 | Broadway Sanitary Trunk Sewer Southerly | 2,600,000.00 |
| A-3 | Soutwest Suburban Sanitary Trunk Sewer | 7,800,000.00 |
| | | $ 20,500,000.00 |
| B - Wastewater Treatment Plant Improvements | | |
| B-1 | Easterly Treatment Plant | $ 8,441,000.00 |
| B-2 | Southerly Treatment Plant Completion of Improvements | 6,385,000.00 |
| B-3 | Westerly Treatment Plant (Under Study) | 12,000,000.00 |
| | | $ 25,826,000.00 |
| C - Gauging & Sampling Stations Construction | | $ 175,000.00 |
| D - Pump Station and Regulator Better program under way Repairs | | $ 350,000.00 |

E - Sewer Construction, non-assessable

Div. Engineering & Construction -

Capital Improvement Program

1966-1971

| | |
|---|---|
| 3,000,000/yr for 6 yrs. | $ 18,500,000.00 |
| TOTAL | $ 66,351,000.00 |

Trunk Sanitary Sewers

The City of Cleveland plans to propose to the suburban communities that preliminary engineering and design of the recommended New Trunk Sanitary Sewers be started as soon as possible, and that the cost of this engineering work which is estimated at $1,025,000 be included in the new sewerage service contracts which are now being negotiated. If agreement is reached, the City of Cleveland would hire consulting engineers to proceed immediately with the necessary preliminary engineering, survey and design work. It is expected that while this engineering work would be in progress, that the Master Plan for Pollution Abatement would be completed and that this plan would contain recommendations as to financing the actual construction of the new Trunk Sanitary Sewers.

Re: Solon

Sewerage November 15, 1965

Mayor and Council
City of Solon
City Hall
6315 S.O.M. Center Road
Cleveland, Ohio 44139

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires November 15, 1966. Renewal of this permit is contingent upon compliance with the following conditions:

1. Place under construction the proposed sewerage and wastewater treatment facilities for North and Northeast Areas in accordance with approved detail plans.
2. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

3. Submit a status report with regard to completion of sewerage and wastewater treatment facilities for the North and Northeast Areas.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M. D., Chairman

Water Pollution Control Board

Enc.-Permit 563.7

Certified mail

cc: Burgess & Niple

cc: Health Commissioner

cc: District Office

# STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
# LAKE ERIE DRAINAGE AREA IN OHIO
# GRAND RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| City | | | | | | | | |
| Painesville | 17,689 | Grand R. | S - Int.+ D<br>24,326 PE | 1958 | I | RGP<br>WTPI (Sec.) | Not yet definite. | |
| Villages | | | | | | | | |
| Chardon | 3,443 | Trib.of Grand R. | S - Sec.<br>3,500 PE | 1955 | A | SWEP | Underway | |
| Fairport Harbor | 4,260 | Grand R. | S - Int.+ D<br>6,000 PE | 1958 | I | Engr.to be hired -<br>RGP - WTPI | Rcvg engrg proposal. | |
| Grand River | 477 | Grand R. | No pub.sewers | | I | DP - S & WTP | 12-15-66<br>UC 1967 | |
| Jefferson | 2,231 | Trib.of Mill Crk | S - Sec.<br>3,500 PE | 1957 | A | SWEP | Underway | |
| Orwell | 830 | Grand R. | No pub.sewers | | I | DP - S & WTP | 12-15-66<br>UC 1967 | |

STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
LAKE ERIE DRAINAGE AREA IN OHIO
HURON RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities | | | | | | | | |
| Huron | 6,462 | Huron R. | S & C (2 Plts)<br>Int. + D<br>6,400 PE<br>2,100 PE | 1964<br>'31,'64 | I | RGP-WTPI (Sec.) | 12-15-66<br>UC 1967 | See Brd Ltr 12-15-65 |
| Norwalk | 14,194 | Rattlesnake Creek | S & C<br>Sec. + D<br>26,000 PE | '32,'64 | I | DP-WTPI | 5-15-66<br>UC 1967 | Part of IW's to spray irrig.facilities. |
| Willard | 5,818 | W.Branch | S & C - Sec.<br>7,500 PE | 1963 | A | | | |
| Villages | | | | | | | | |
| Milan | 1,563 | Trib.of Huron R. | S - Pr.<br>600 PE | '41,'62 | I | DP-New WTP | 12-15-66<br>UC 1967 | |
| Monroeville | 1,413 | W.Branch | C - Pr. + D<br>1,700 PE | 1959 | I | RGP-WTPI | 6-15-66 | |
| Plymouth | 1,953 | Huron R. | C - Sec.<br>2,400 PE | 1966 | I | Stab.Ponds<br>UC | In op.<br>6-15-66 | |
| Shiloh | 754 | Trib.of Huron R. | S - Sec.<br>1,200 PE | 1960 | A | | | |

Re: Huron

Sewerage December 15, 1967

Mr. Dean E. Sheldon, Jr.
City Manager
City Hall
Huron, Ohio 44839

Dear Sir:

As a result of Board action December 14, 1965, enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires December 15, 1966. Renewal of this permit is contingent upon compliance with the following Orders:

1. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.
2. Place under construction sanitary sewerage in the Huronic Beach, North Palm Beach and Oak Point Areas in accordance with approved detail plans.

3. Submit a report and general plan for compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 7, 8, 9, 10, and 11 concerning the means to maximize the reduction of biochemical oxygen demand, phosphates, and coliform concentrations.

Should you have any questions with respect to the above Orders, please notify us promptly.

Yours very truly,

E. W. Arnold, M. D., Chairman
Water Pollution Control Board

Enc.-Permit 134.14
-Recom. & Concl.

Certified mail

cc: Mayor and Council
cc: Health Commissioner
cc: District Office

## STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
## LAKE ERIE DRAINAGE AREA IN OHIO
## MAUMEE RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities | | | | | | | | |
| Bryan | 7,760 | Trib's to Tiffin R. | C - Sec.+ D<br>15,437 PE | '40,'62 | A | | | |
| Defiance | 16,058 | Maumee R. | S & C-Int.+ D<br>23,000 PE | 1957 | I | RGP - WTPI (Sec.) | 9-15-66 | See Brd Ltr 11-10-65 |
| Delphos | 7,404 | Jennings Creek | C - Sec.+ D<br>7,500 PE | '31,'55 | A | SSI - Financ. | 12-15-66 | See Brd Ltr 1-17-66 |
| Findlay | 34,061 | Blanchard River | S & C -Sec.<br>30,000 PE | '31,'54 | I | RGP - SSE<br>WTPI | 7-15-66 | |
| Lima | 55,927 | Ottawa R. | S & C -Sec.+D<br>70,000 PE | '31,'55 | A | SWEP | Underway 1966 | |
| Napoleon | 7,528 | Maumee R. | S & C -Sec.+D<br>7,500 PE | 1959 | A | SWEP | Underway | Sewer ext's completed. |
| Perrysburg | 6,553 | Grassy Crk | C - Int.+Prechl.<br>10,000 PE | 1959 | I | RGP - WTPI (Sec.) | 6-15-67<br>DP -6-68<br>UC & in op. 12-69 | |
| St. Marys | 8,275 | St. Marys River | S - Sec.<br>22,900 PE | 1949 | I | DP - WTPI<br>Financ.<br>Constr. | 8-15-66<br>8-15-66<br>in 1967 | See Brd Ltr 8-13-65 |
| Toledo | 363,297 | Maumee R. | S & C - Sec.+D<br>420,000 PE | '31,'59 | I | DP - Sl.Hand. Facils | 7-15-66<br>UC Fall 1966 | Max.treat.underway.<br>See Brd Ltr 10-15-65 |

(5-year Capital Improvements Program - Sewerage - E.C.$12,500,000)

## STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
## LAKE ERIE DRAINAGE AREA IN OHIO
## MAUMEE RIVER BASIN - Contd.

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities - contd. | | | | | | | | |
| Van Wert | 11,684 | Trib's to Auglaize R. | S & C - Sec.+D<br>24,200 PE (BOD)<br>12,450 PE (S.S.) | '35,'56 | I | RGP - WTPI | 11-15-66 | |
| Wapakoneta | 7,326 | Auglaize River | S & C - Sec.<br>12,000 PE | '36,'57 | A | SSI | To be scheduled. | |
| Villages | | | | | | | | |
| Ada | 4,037 | Trib.of Ottawa R. | C - Sec.<br>4,000 PE | 1957 | A | | | |
| Antwerp | 1,614 | Maumee R. | S & C<br>No Treat. | | I | RGP - WTPI | 7-1-66 | Engr. hired 2-66. |
| Archbold | 2.603 | Trib.of Tiffin R. | C - Chem.+Sec.+D<br>34,000 PE | 1961 | A | RGP - SSI<br>DP | 2-15-67 Feasibil. study. | |
| Bluffton | 2,736 | Trib's to Auglaize R. | C - Sec.<br>4,200 PE | 1954 | A | RGP - SSI | 1-15-67 | |
| Columbus Grove | 2,150 | Trib.of Auglaize R. | S - Sec.+ D<br>5,000 PE | 1937 | I | DP - WTPI | 2-15-67<br>UC - Summer '67 | |
| Continental | 1,172 | Trib's to Auglaize R. | C - Sec.<br>1,400 PE | 1958 | A | SSI | | |
| Convoy | 996 | Trib's to Auglaize R. | S - Sec.+ D<br>900 PE | 1939 | A | | | |
| Cridersville | 1,210 | Trib's to Auglaize R. | S - Sec.<br>2,000 PE | 1966 | A | | | |

STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
LAKE ERIE DRAINAGE AREA IN OHIO
MAUMEE RIVER BASIN - Contd.

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Villages - contd. | | | | | | | | |
| Delta | 2,486 | Bad Crk | S - Sec.+ D<br>4,680 PE | 1958 | A | | | |
| Deshl | 1,909 | Brush Crk | S - Sec.<br>4,600 PE | 1959 | A | | | |
| Dunkirk | 1,036 | Trib.of Blanchard R. | No pub.sewers | | Postp.<br>MP. I | | | |
| Elida | 1,412 | Ottawa R. | C - Sec.<br>3,000 PE | | I | | UC<br>(In op. - 1967) | |
| Fayette | 1,112 | Trib's to Tiffin R. | S & C - Sec.<br>2,164 PE | 1963 | A | | | |
| Forest | 1,370 | Trib.of Blanchard R. | S & C | | I | | | Contracts awarded then rescinded by village council - Pub.Hearing 8-9-66 before Brd. |
| Hamler | 648 | Turkeyfoot Creek | No pub.sewers | | I | Financ.Prog.<br>UC | 12-1-66<br>In 1967 | RGP apprvd 3-65 |
| Haskins | 542 | Haskins Crk | S - Pr.<br>200 PE | 1939 | I | Hire Engr. for RGP | 5-15-67 | |
| Hicksville | 3,324 | Mill Crk | C - Sec.+ D<br>4,000 PE | '35,'63 | A | Schedule for SSI | 6-15-66 | |
| Holgate | 1,482 | Trib.of Turkeyfoot Creek | No pub.sewers | | I | RGP - SWTP | Overdue | |
| Leipsic | 1,844 | Trib's to Beaver Crk | C - Sec.<br>2,500 PE | 1958 | A | | | |

## STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
## LAKE ERIE DRAINAGE AREA IN OHIO
## MAUMEE RIVER BASIN - Contd.

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Villages - contd. | | | | | | | | |
| Liberty Center | 924 | Dry Crk | No pub.sewers | | I | Financ.Prog. | 12-15-66 | RGP apprvd 11-13-63 |
| Montpelier | 4,259 | St.Joseph River | C - Prim. 5,150 PE | 1958 | I | RGP - SWPI (Sec.) | 7-15-66 | |
| New Bremen | 2,155 | Trib.of St. Marys River | C - Sec. 2,000 PE | 1934 | A | SSI | | |
| Northwood | 3,843 | Grassy Creek | No pub.sewers | | I | Negot.agreements with Toledo-Wood Co. | 9-15-66 | See Brd Ltr 11-15-65 |
| Ohio City | 856 | Trib's to Auglaize R. | No pub.sewers | | I | DP - SWTP | 11-8-66 | See Brd Find.& Ord. 4-12-66 |
| Ottawa | 3,475 | Blanchard River | C - Sec.+ D 5,800 PE | 1955 | A | SSI | | |
| Ottoville | 825 | Trib.of Auglaize R. | No pub.sewers | | I | RGP - SWTP | 11-15-66 | |
| Pandora | 803 | Trib.of Blanchard R. | No pub.sewers | | I | DP - SWTP | 8-9-66 | See Brd Find.& Ord. 3-8-66 |
| Paulding | 3,154 | Trib.of Auglaize R. | C - Sec. 5,900 PE | 1964 | A | SSI | 6-15-66 | |
| Payne | 1,324 | Trib.of Auglaize R. | C - Sec. 2,700 PE | | I | UC | In op. 1967 | |
| Rockford | 1,172 | St.Marys River | C - Prim. 1,240 PE | 1959 | I | Sched of plans-financ. & constr. | 8-15-66 | |

## STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
## LAKE ERIE DRAINAGE AREA IN OHIO
## MAUMEE RIVER BASIN - Contd.

| Entity | 1965 Pop. | Receiving Stream | Type Sew. Syst. Treat. & Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Villages - contd. | | | | | | | | |
| Sherwood | 649 | Trib. of Sulphur Crk | No pub. sewers | | I | RGP - SWTP | 8-15-66 | |
| Spencerville | 2,125 | Trib. of Auglaize R. | S - Sec.<br>2,500 PE | 1956 | A | SWEP | | |
| Stryker | 1,281 | Trib. of Tiffin R. | C - Sec.<br>1,600 PE | 1965 | A | SSI | DP - apprvd<br>7-6-65 - E.C.<br>$185,000 | |
| Swanton | 2,548 | Swan Crk | S & C - Sec.<br>3,000 PE | 1958 | A | SWEP | 9-1-66 | |
| Waterville | 2,175 | Maumee R. | C - Sec.<br>1,500 PE | 1958 | I | RGP - WTPI | 6-15-66 | See Brd Ltr 2-15-66 |
| Wauseon | 4,748 | Turkeyfoot Creek | S & C Sec.+D<br>22,067 PE | '39, '64 | A | | | |
| West Leipsic | 340 | Trib's to Beaver Crk | No pub. sewers | | I | Financ. Prog. to make trib. to Leipsic | 7-15-66 | |
| Weston | 1,120 | Tontogany Creek | C - Sec.<br>1,500 PE | | I | Constr. of facils | summer 1966 | Fed. Grant Apprvd. |
| West Unity | 1,550 | Trib. of Tiffin R. | No pub. sewers | | I | DP - SWTP | 6-15-66 | |
| Whitehouse | 1,258 | Trib. of Swan Crk | S & C - Sec.+D<br>2,000 PE | 1965 | A | SSI | 5-15-67 | See Brd Ltr 5-16-66 |

Re: Defiance

Sewerage November 10, 1965

Mayor and Council
City Hall
Third and Perry Streets
Defiance, Ohio 43512

Gentlemen:

As a result of Board action November 9, 1965, enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires September 15, 1966. Renewal of this permit is contingent upon compliance with the following Orders:

1. Complete detail plans for proposed sanitary sewers as outlined in supplemental report dated September 13, 1965, and submit to the Ohio Department of Health for approval.
2. Place under construction sanitary sewers covered by Order No. 1.
3. Submit a report on progress made in elimination of storm waters in sanitary sewers.
4. Provide satisfactory operation and maintenance of the existing sewerage and wastewater

treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

5. Submit a report and general plan for compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 7, 8, 9, 10, and 11 concerning the means to maximize the reduction of biochemical oxygen demand, phosphates, and coliform concentrations.

Should you have any questions with respect to the above Orders, please notify us promptly.

Very truly yours,

E. W. Arnold, M. D., Chairman
Water Pollution Control Board

Enc.-Permit 306.15
-Recom. & Concl.

Certified mail

cc: Health Commissioner

cc: District Office

Re Delphos

Sewerage

January 17, 1966

Mayor and Council
City Building
East Second Street
Delphos, Ohio 45833

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires December 15, 1966. Renewal of this permit is contingent upon compliance with the following conditions:

1. Adopt all legislation and take all legal steps necessary to issue and sell bonds, notes, or other securities and provide adequate funds for the construction, operation, and maintenance of the proposed sewerage improvements.
2. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

3. Submit a report and general plan for compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 7, 9, 10, and 11 concerning maximum plant performance and eliminating combined sewers.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M. D., Chairman

Water Pollution Control Board

Enc.-Permit 532.11

-Recom. & Concl.

Certified mail

cc: Health Commissioner

cc: District Office

* * * * *

Re: Saint Marys

Sewerage

August 13, 1965

Mayor and Council
City Building
North Hickory Street
Saint Marys, Ohio

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires August 15, 1966. Renewal of this permit is contingent upon compliance with the following conditions:

1. Prepare detail plans, specifications, and estimates of cost of proposed wastewater treatment plant improvements substantially in accordance with the general plan approved May 24, 1965, and secure approval thereof by the Ohio Department of Health.
2. Investigate ways and means for financing the construction of the proposed wastewater treatment plant improvements; formulate a program of financing and construction of the proposed work and submit for approval.
3. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

4. Submit a proposed schedule for construction of the wastewater treatment plant improvements.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M. D., Chairman

Water Pollution Control Board

Enc.-Permit 431.7

Certified mail

cc: Health Commissioner

cc: District Office

* * * * *

Re: Toledo
Sewerage

October 15, 1965

Mr. Frank H. Beckstrom
City Manager
310 Safety Building
Toledo, Ohio 43624

Dear Sir:

As a result of Board action October 14, 1965, enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires July 15, 1966. Renewal of this permit is contingent upon compliance with the following Orders:

1. Complete the detail plans, specifications, and financing for the sludge dewatering facilities together with other proposed improvements to the wastewater treatment works and secure approval thereof by the Ohio Department of Health.
2. Submit a report setting forth the capital improvements, specifically regarding sanitary sewerage projects placed under construction, completed, or planned during the interim of this permit.
3. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.
4. Submit a report and general plan for compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 7, 8, 9, 10, and

11 concerning the means to maximize the
reduction of biochemical oxygen demand,
phosphates, and coliform concentrations.

Referring to Order 2 above, it is apparent that review and revision of the city's capital improvement program is necessary in accordance with the Conclusions and Recommendations of the Lake Erie Conference. Attention is directed to the need to place a higher priority on sewering the Reynolds Road Area because of the Board's past findings concerning serious conditions of pollution.

Yours very truly,
E. W. Arnold, M. D., Chairman
Water Pollution Control Board

Enc.-Permit 105.16
-Recom. & Concl.
Certified mail
cc: Mayor and Council
cc: Mr. James E. Frock
cc: Health Commissioner
cc: District Office

* * * * *

Re: Van Wert
Sewerage

January 17, 1966

Mayor and Council

City Building

Van Wert, Ohio 45891

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires November 15, 1966. Renewal of this permit is contingent upon compliance with the following conditions:

1. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.
2. Submit a report and general plan for compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 7, 8, 10, and 11 concerning the means to maximize the reduction of solids, biochemical oxygen demand, phosphates, and coliform

concentrations, together with eliminating combined sewers.

3. Submit a proposal by April 15, 1966, for placing the operation of the wastewater treatment plant under the supervision of at least a Class II operator.

A high degree of treatment for the receiving stream may necessitate consideration being given to tertiary treatment.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,
E. W. Arnold, M.D., Chairman
Water Pollution Control Board

Enc.-Permit 714.14
-Recom. & Concl.
Certified mail
cc: Supt. Wastewater Treat. Plant
cc: Health Commissioner
cc: District Office

*******

Re: Northwood
Sewerage

November 15, 1965

Mayor and Council
Village of Northwood
3615 Oram Road
Toledo, Ohio 43616

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires September 15, 1966. Renewal of this permit is contingent upon compliance with the following conditions:

1. Submit a copy of agreement reached with Toledo for acceptance of municipal wastes from the westerly part of Northwood into the Toledo sewer system.
2. Submit copies of the resolutions adopted whereby Wood County assumes the responsibility for preparing detail plans for lateral sanitary sewers within Northwood, together with an estimate of time for completion of plans and construction of sewers.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M.D., Chairman

Water Pollution Control Board

Enc.-Permit 1846.3

Certified mail

cc: Finkbeiner, Pettis & Strout

cc: Health Commissioner

cc: District Office

* * * * *

Before

THE WATER POLLUTION CONTROL BOARD

DEPARTMENT OF HEALTH

STATE OF OHIO

In the Matter of the )
) Order to Show Cause - Case No. 94
Village of Ohio City, Ohio )

## FINDING AND ORDER

The Board coming now to consider the evidence and arguments presented in the hearing on this matter finds:

That due notice of this hearing has been given to the respondent herein pursuant to Section 611.06(C) and 119.07, Revised Code.

It is therefore

ORDERED, that this hearing be continued until 10:00 a.m., November 8, 1966, in the Conference Room of the Ohio Department of Health, Room 155, 450 East Town Street, Columbus, Ohio.

ORDERED, that the respondent herein, the Village of Ohio City, Ohio, prepare and submit for approval by the Ohio Department of Health detail plans and specifications of proposed sewerage and wastewater treatment works and substantially in accordance with approved general plan.

ORDERED, that the respondent formulate a program of financing and construction of the proposed project and submit for approval.

ORDERED, that the respondent submit June 1, August 1, and November 1, 1966, reports of progress regarding the preparation of plans and the formulation of a financing program.

It is further

ORDERED, that a certified copy of this order be served forthwith by certified mail upon the respondent herein.

E. W. Arnold, M.D., Chairman

J. Gordon Peltier, Vice Chairman

Fred E. Morr

Barton Holl

S. D. Bresler

Adopted April 12, 1966
at Columbus, Ohio

* * * * *

Before
THE WATER POLLUTION CONTROL BOARD
DEPARTMENT OF HEALTH
STATE OF OHIO

| | |
|---|---|
| In the Matter of the<br>Village of Pandora, Ohio | Order to Show Cause - Case No. 76<br>(Continued) |

## FINDING AND ORDER

The Board coming now to consider the evidence and arguments presented in the hearing on this matter finds:

> That due notice of this hearing has been given to the respondent herein pursuant to Sections 6111.06(C) and 119.07, Revised Code.

It is therefore

ORDERED, that this hearing be continued until 10:00 a.m., E.S.T., August 9, 1966, in the Conference Room of the Ohio Department of Health, Room 155, 450 East Town Street, Columbus, Ohio.

ORDERED, that the respondent herein, the Village of Pandora, Ohio, submit by August 1, 1966, a summary report indicating progress made with respect to (a) securing approval by the Ohio Department of Health of detail plans for necessary sewerage and wastewater treatment facilities, (b) formulation of a financing program, and (c) construction of such facilities.

It is further

ORDERED, that a certified copy of this order be served forthwith by certified mail upon the respondent herein.

E. W. Arnold, M.D., Chairman

J. Gordon Peltier, Vice Chairman

Robert W. Teater

Barton Holl

S. D Bresler

Adopted March 8, 1966,

at Columbus, Ohio.

Re: Waterville

Sewerage February 15, 1966

Mayor and Council
Town Hall
16 North Second Street
Waterville, Ohio 43566

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires February 15, 1967. Renewal of this permit is contingent upon compliance with the following conditions:

1. Prepare report and general plan for necessary wastewater treatment plant improvements and expansions and secure approval thereof by the Ohio Department of Health.
2. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department

of Health.

3. Prior to June 15, 1966, submit a schedule for compliance with the Recommendations and Conclusions of the Lake Erie Conference (copy enclosed), with special reference to Sections 7, 8, 9, 10 and 11 concerning the means to maximize the reduction of biochemical oxygen demand, phosphates, and coliform concentrations.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M.D., Chairman

Water Pollution Control Board

Enc.-Permit 264.14

-Recom. & Concl.

Certified mail

cc: Health Commissioner

cc: District Office

* * * * *

Re: West Unity

Sewerage

April 1, 1966

Mayor and Council
Municipal Building
West Unity, Ohio 43570

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires June 15, 1966. Renewal of this permit is contingent upon compliance with the following conditions:

1. Complete the report and general plan for necessary sewerage and wastewater treatment works and secure approval thereof by the Ohio Department of Health.
2. Submit a report setting forth steps taken to implement a financing program for construction of sewerage and wastewater treatment works.

Cognizance is taken of the change of consulting engineers recently.

The permit is timed for completion of the first step as set forth in the letter of March 10, 1966, by your solicitor.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M.D., Chairman

Water Pollution Control Board

Enc.-Permit 24.16

Certified mail

cc: Village Solicitor

cc: Mr. Eugene C. Gerken, Engr.

cc: Health Commissioner

cc: District Office

* * * * *

Re: Whitehouse
Sewerage

May 16, 1966

Mayor and Council
Municipal Building
Whitehouse, Ohio 43571

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires May 15, 1967. Renewal of this permit is contingent upon compliance with the following conditions:

1. Submit a report with respect to compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 9, 10, and 11.
2. Submit a report with respect to progress made regarding connection of those residences or establishments not yet tributary to the municipal sewerage system.
3. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

Prior to May 15, 1968, you will be expected to comply with Regulation 452, Ohio Sanitary Code, by placing your wastewater treatment plant under the responsible charge of a full-time employee of the municipality who possesses an operator's certificate appropriate for this Class I plant, and to continue technical supervision until the operator is properly certified.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M.D., Chairman

Water Pollution Control Board

Enc.-Permit 318.13

-Recom. & Concl.

Certified mail

cc: Finkbeiner, Pettis & Strout

cc: Supt. Wastewater Treat. Plant

cc: Health Commissioner

cc: District Office

* * * * *

# STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
LAKE ERIE DRAINAGE AREA IN OHIO
OTTAWA RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| City | | | | | | | | |
| Sylvania | 7,650 | Tenmile Crk | S - Sec.+ D<br>3,000 PE | 1957 | I | Excess flow to be disch. to Toledo Syst. | UC 7-15-66 | |
| Sewer Districts | | | | | | | | |
| Lucas County | | | | | | | | |
| Metropolitan S.D.<br>Bentbrook Farms | | Tenmile Crk | S - Sec.<br>6,000 PE | 1965 | A | | | |
| Metropolitan S.D.<br>Lincoln Green Subdiv. | | Trib's to Tenmile Crk | S - Sec.+ D<br>1,800 PE | 1960 | A | | | |
| Metropolitan S.D.<br>Sylvania Park | | Tenmile Crk | S - Sec.+ D<br>1,800 PE | 1965 | A | | | |

STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
LAKE ERIE DRAINAGE AREA IN OHIO
PORTAGE RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities | | | | | | | | |
| Bowling Green | 16,341 | Poe Ditch | S & C-Sec.+ D<br>59,127 PE | '35, '39, & '62 | A | RGP - SSI | 4-1-67 | |
| Fostoria | 16,479 | E.Branch Portage R. | C - Sec.<br>40,000 PE | 1952 | A | SSI | Underway | |
| Port Clinton | 7,352 | Portage R. | S & C-Int.+ D<br>15,000 PE | 1956 | I | RGP-SSI<br>WTPI<br>(Sec.) | 12-15-66 | |
| Villages | | | | | | | | |
| Bloomdale | 703 | S.Branch Portage R. | No pub.sewers | | I | Complete financing & const.sched. | 2-15-67 | See Brd Ltr 4-15-66 |
| Elmore | 1,360 | Portage R. | Misused storm drains | | I | RGP - SSI<br>WTP | 12-15-66 | See Brd Ltr 4-1-66 |
| McComb | 1,269 | N.Branch Portage R. | S & C-Pr.+ D<br>1,000 PE | 1937 | I | DP - SSI<br>WTPI | 4-15-67 | See Brd Ltr 4-15-66 |
| North Baltimore | 3,036 | S.Branch Portage R. | C - Sec.<br>3,500 PE | 1960 | A | RGP - SSI | 1-15-67 | |
| Oak Harbor | 3,128 | Portage R. | S - Pr.+ D<br>4,000 PE | 1958 | I | Hire Engr for RGP - SSI<br>WTPI | | |
| Pemberville | 1,278 | Portage R. | Misused storm drains | | I | Schedule for plns,fin.& construction | 6-15-66 | |

Re: Bloomdale

Sewerage

April 15, 1966

Mayor and Council
Municipal Building
Bloomdale, Ohio 44817

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires February 15, 1967. Renewal of this permit is contingent upon compliance with the following conditions:

1. Complete a financing and construction schedule for sewerage and wastewater treatment works and submit for approval.
2. By February 15, 1967, submit a schedule for compliance with the Recommendations and Conclusions of the Lake Erie Conference (copy enclosed), with special reference to Sections 7-11, inclusive.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M. D., Chairman
Water Pollution Control Board

Enc.-Permit 234.16

-Recom. & Concl.

Certified mail

cc: Village Solicitor

cc: Finkbeiner, Pettis & Strout

cc: Health Commissioner

cc: District Office

* * * * * * *

Re: Elmore
Sewerage April 1, 1966

Mayor and Council
Municipal Building
Elmore, Ohio 43416

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires December 15, 1966. Renewal of this permit is contingent upon compliance with the following conditions:

1. Complete the revised report and general plan for necessary sewerage and wastewater treatment

facilities and secure approval thereof by the Ohio Department of Health.

2. Authorize and direct the preparation of detail plans and specifications of proposed sewerage and wastewater treatment facilities substantially in accordance with approved revised general plan and secure approval thereof by the Ohio Department of Health.
3. Complete the investigation of ways and means for financing the construction of the proposed sewerage and wastewater treatment facilities; formulate a program of financing and construction of the proposed work and submit for approval.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,
E. W. Arnold, M. D., Chairman
Water Pollution Control Board

Enc.-Permit 289.16
Certified mail
cc: George W. Raike, Inc.
cc: Health Commissioner
cc: District Office

Re: McComb

Sewerage

April 15, 1966

Board of Public Affairs
Municipal Building
McComb, Ohio 45858

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires April 15, 1967. Renewal of this permit is contingent upon compliance with the following conditions:

1. Prepare detail plans and specifications for proposed sewers and wastewater treatment plant improvements in accordance with approved general plan and secure approval thereof by the Ohio Department of Health.
2. Complete the investigation of ways and means for financing construction of the proposed sewerage and wastewater treatment plant improvements; formulate a program of financing and construction of the proposed work and submit for approval.
3. Provide satisfactory operation and maintenance

of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,
E. W. Arnold, M. D., Chairman
Water Pollution Control Board

Enc.-Permit 130.13

Certified mail

cc: Mayor and Council

cc: Health Commissioner

cc: District Office

STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
LAKE ERIE DRAINAGE AREA IN OHIO
ROCKY RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities | | | | | | | | |
| Berea | 19,643 | E.Branch Rocky R. | S - Sec.+ D 20,000 PE | '36, '51, & '65 | I | Engineer hired for RGP - WTPI | DP - 9-1-65<br>UC - 1967 | |
| Broadview Heights | 8,588 | Trib.of Rocky R. | No pub.sewers | | I | RGP - SWTP | 3-15-66 | Det.plans & construction in 1967 |
| Brook Park | 24,575 | Abram Crk | S - Sec.+ D 10,000 PE | '58, '65 | A | | | Major part of city trib. to Cleveland |
| Lakewood | 70,209 | Rocky R. | S - C Sec.+D 130,000 PE | 1965 | A | MTP | 10-15-66 | See Brd Ltr 11-10-65 |
| Medina | 9,794 | W.Branch Rocky R. | S - Sec.+ D 13,500 PE | '31, '61 | A | | | |
| Middleburgh Heights | 9,911 | Abram Crk | S - Sec. 2,000 PE | 1950 | I | Place severage & Tr.Plt UC | Aug. 1966 | Enforcement actions by Board 9-8-64 & 6-8-65 |
| North Olmsted | 23,093 | Rocky R. | S - Sec.+ D 25,000 PE | 1961 | A | SSE | Underway | See Brd Ltr 1-17-66 |
| North Royalton | 11,101 | Baldwin Crk, E. Branch Rocky R. | S-(2 Plts)Sec.+D Total 11,400 PE | | I | DP - WTP for S.D. "C" | 6-15-66 | 2 Plts-in op 6-15-66<br>3rd plt-in op 6-67 |
| Strongsville | 11,502 | E & W Branches Rocky R. | S-(3 Plts)Sec.+D Total 7,347 PE | | I | | 3 Plts-UC<br>In op 6-15-66 | |
| Villages | | | | | | | | |
| Olmsted Falls | 2,284 | Plum Crk, W.Branch Rocky R. | Misused storm drains | | I | DP apprvd - Fed Grant offer accepted<br>Const.-Adv.for bids 9-66 | | Enforcement action by Board 4-13-65 |

STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
LAKE ERIE DRAINAGE AREA IN OHIO
ROCKY RIVER BASIN - contd.

| Entity | 1965 Pop. | Receiving Stream | Type Sev.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Sewer Districts | | | | | | | | |
| Cuyahoga County | | | | | | | | |
| Middleburgh Heights S.D. | | Abram Crk | S-Sec.<br>2,000 PE | 1950 | I | Place - UC | 8-9-66 | Enforcement actions by Board 9-8-64 & 6-8-65 |
| Sewer District #14<br>Breezewood Subdivision | | W.Branch Rocky R. | S-Sec. + D<br>1,500 PE | 1960 | A | | | |
| Medina County | | | | | | | | |
| Sewer District #5 | | W.Branch Rocky R. | S-Sec. + D<br>1,600 PE | 1958 | A | | | |
| Sewer District #7<br>Colony Park Subdivision | | Healey Crk<br>E.Branch Rocky R. | S-Sec. + D<br>1,200 PE | '59, '62 | A | | | |
| Sewer District #8<br>Beverly Hills Subdivision | | Trib.of W.Branch Rocky R. | S-Sec. + D<br>1,300 PE | 1963 | A | | | |
| Sewer District #100 | Est. 6,500 Trib. | W.Branch Rocky R. | S-Sec. + D<br>20,000 PE | 1963 | A | | | |

Re: Lakewood

Sewerage

November 10, 1965

Mayor and Council
City of Lakewood
12650 Detroit Avenue
Cleveland, Ohio 44107

Gentlemen:

As a result of Board action November 9, 1965, enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires October 15, 1966. Renewal of this permit is contingent upon compliance with the following Orders:

1. Submit a report and general plan for compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 7, 8, 9, 10, and 11 concerning the means to maximize the reduction of biochemical oxygen demand, phosphates, and coliform concentrations.
2. Provide satisfactory operation and maintenance of the existing sewerage and new wastewater treatment works including the

submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

Should you have any questions with respect to the above Orders, please notify us promptly.

Yours very truly,

E. W. Arnold, M.D., Chairman

Water Pollution Control Board

Enc.-Permit 144.15

-Recom. & Concl.

Certified mail

cc: Director of Public Works

cc: Frank L. Woodruff & Associates

cc: Health Commissioner

cc: District Office

* * * * *

Re: North Olmsted

Sewerage

January 17, 1966

Mayor and Council
City Hall
North Olmsted, Ohio 44070

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires January 15, 1967. Renewal of this permit is contingent upon compliance with the following conditions:

1. Complete construction of sewerage in accordance with approved plans.
2. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.
3. Submit a proposed schedule for construction of sanitary sewerage to serve the remaining unsewered portion of North Olmsted.
4. Prior to June 1, 1966, submit a schedule for compliance with the Conclusions and Recommendations of the Lake Erie Conference (copy enclosed), with special reference to Sections 6, 7, 9, 10, and 11 concerning the means to maximize the reduction of biochemical oxygen demand, phosphates and

coliform concentrations.

Cognizance is taken that the wastewater treatment plant is operated under an appropriately certified operator in accordance with Regulation 452 of the Ohio Sanitary Code.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M.D., Chairman

Water Pollution Control Board

Enc.-Permit 58.17

-Recom. & Concl.

Certified mail

cc: Health Commissioner

cc: District Office

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## STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
## LAKE ERIE DRAINAGE AREA IN OHIO
## SANDUSKY RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities | | | | | | | | |
| Bucyrus | 13,404 | Sand. R. | C - Sec.<br>17,500 PE | '39,'61 | A | MTP - SWEP | Underway | |
| Crestline | 6,167 | Paramour Creek | S & C - Sec.+ D<br>6,000 PE | 1947 | A | SWEP | Underway | |
| Fremont | 20,058 | Sand. R. | C - Sec.+ D<br>128,500 PE | 1949-66 | I | WTPI | UC<br>In op.10-1-66± | |
| Tiffin | 22,475 | Sand. R. | C - Pr. + D<br>25,000 PE | 1956 | I | DP - WTPI (Sec.) | 7-1-66<br>UC by 2-15-67 | See Brd Ltr 4-1-66 |
| Villages | | | | | | | | |
| Attica | 1,012 | Honey Crk | Misused drains | | I | RGP-SWTP<br>DP-SWTP | 6-15-66<br>1967 | See Brd Ltr 2-15-66 |
| Bloomville | 862 | Honey Crk | ditto | | I | | | Enforcement Action - See Notice of Viol. 1-11-66 |
| Carey | 3,822 | Trib's to Tymochtee Creek | S - Sec.<br>6,000 PE | '39,'62 | A | SWEP | | |
| Nevada | 919 | Trib.of Broken Sword Crk | Misused drains | | I | Invest.<br>Financing | | RGP apprvd 9-25-64 |
| Upper Sandusky | 5,286 | Sand. R. | S - Sec.+ D<br>7,000 PE | 1956 | A | SWEP | | |

Re: Tiffin

Sewerage

April 1, 1966

Mayor and Council
Municipal Building
Tiffin, Ohio 44883

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires February 15, 1967. Renewal of this permit is contingent upon compliance with the following conditions:

1. Complete the detail plans and specifications of proposed wastewater treatment ment plant improvements substantially in accordance with approved general plan and secure approval thereof by the Ohio Department of Health.
2. Place under construction the proposed wastewater treatment plant improvements in accordance with approved detail plans.
3. Provide satisfactory operation and maintenance of the existing sewerage and wastewater treatment works including the submission

of regular operating reports and annual summaries as required by the Division of Engineering, Ohio Department of Health.

4. Prior to June 15, 1966, submit a schedule for compliance with the Recommendations and Conclusions of the Lake Erie Conference (copy enclosed), with appropriate consideration to Sections 7 through 11, inclusive.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly,

E. W. Arnold, M.D., Chairman
Water Pollution Control Board

Enc.-Permit 313.17
-Recom. & Concl.

Certified Mail

cc: Safety-Service Director
cc: F. G. Browne & Associates
cc: Health Commissioner
cc: District Office

* * * * *

Re: Attica

Sewerage February 15, 1966

Mayor and Council
Municipal Building
Attica, Ohio 44807

Gentlemen:

Enclosed is renewal permit for the discharge of sewage from your municipality into "waters of the state" pursuant to the provisions of the Water Pollution Control Act of Ohio.

You will note that this permit expires June 15, 1966. Renewal of this permit is contingent upon compliance with the following conditions:

1. Complete negotiations with industry and determine the tributary loads so that the design of the necessary sewerage and wastewater treatment facilities can be completed without delay.
2. Complete the report and general plan for necessary sewerage and wastewater treatment facilities in accordance with determinations of Condition 1.

Should you have any questions with respect to the above conditions, please notify us promptly.

Yours very truly.

E. W. Arnold, M.D., Chairman
Water Pollution Control Board

Enc.-Permit 45.15

Certified mail

cc: Village Solicitor

cc: Jones, Henry & Williams

cc: Health Commissioner

cc: District Office

* * * * * *

STATE OF OHIO

DEPARTMENT OF HEALTH

WATER POLLUTION CONTROL BOARD

## NOTICE OF VIOLATION

Mayor and Council
Municipal Building
Bloomville, Ohio 44818

January 14, 1966

You are hereby notified, pursuant to Section 6111.06 (A) Revised Code, that it appears to the Water Pollution Control Board you are in violation of the provisions of the Water Pollution Control Act in that:

1. You are causing pollution of the waters of the State of Ohio without a valid

and unexpired permit, or renewal thereof, to do so. This constitutes a violation of Section 6111.04 Revised Code.

2. You have failed to indicate progress made with respect to the preparation of detail plans for necessary sewerage and wastewater treatment facilities.

Unless the matters above stated be corrected within a period of sixty days from the date of this notice, or unless you shall request a hearing on said matters within thirty days of the date of this notice, the Board at the end of the sixty-day period will make and issue an order, finding you in violation of the Act, and requesting the Attorney General to prosecute the violation.

The above results from Board action taken January 11, 1966.

E. W. Arnold, M.D., Chairman
Water Pollution Control Board

Certified mail

cc: Attorney General

cc: Mr. Warren G. Wolf

cc: Alfred LeFeber & Assocs.

cc: Health Commissioner

cc: District Office

### STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
### LAKE ERIE DRAINAGE AREA IN OHIO
### VERMILION RIVER BASIN

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| **City** | | | | | | | | |
| Vermilion | 7,723 | Vermilion River | S - 2 Plts<br>Pr. + D<br>4,000 PE<br>1,500 PE | 1921<br>1957 | I | DP - SWTP<br>Financing | 6-15-66<br>Constr.in Fall 1966 | |
| **Villages** | | | | | | | | |
| Greenwich | 1,375 | SW Branch | C - Sec.<br>2,000 PE | 1965 | A | | | |
| New London | 2,514 | Skellenger Creek | S - Sec. + D<br>3,900 PE | '42,'63 | A | | | |

## STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES
## TRIBUTARY TO LAKE ERIE

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cities | | | | | | | | |
| Amherst | 8,617 | Beaver Crk | S - Sec.<br>10,000 PE | '27,'57 | A | RGP | 9-1-66 | |
| Bellevue | 8,846 | Big Ditch<br>Pipe Crk | No pub.sewers | | I | DP-SWTP<br>UC | 6-15-66<br>1-10-67 | See Brd Find.& Ord. 4-12-66 |
| Conneaut | 14,951 | Conneaut Creek | S - Int. + D<br>17,000 PE | 1957 | I | RGP-WTPI | 9-15-66 | |
| Geneva | 6,099 | Cowles Crk | S - Sec.+ D<br>2,800 PE | '39,'58 | A | SWEP | | |
| Westlake | 14,574 | Porter Crk | No pub.sewers | | I | Financ.Prog. in Court | Depends on litigation | See Brd Find.& Ord. 6-14-66 |
| Villages | | | | | | | | |
| Clyde | 4,940 | Trib's to Sand.Bay | S - Sec.+ D<br>6,500 PE | 1955 | A | SSE | Report 6-15-66 | |
| Genoa | 2,116 | Trib.of Toussaint R. | C - Sec.<br>2,800 PE | 1964 | A | SWEP | | |
| Green Springs | 1,316 | Trib's to Sand. Bay | S & C - Pr.<br>1,300 PE | 1936 | I | RGP-WTPI<br>Financ.<br>UC | Apprvd 4-1-66 | |
| Lindsey | 611 | Muddy Crk<br>Sand. Bay | S - Sec.<br>660 PE | 1942 | A | | | |
| Madison | 1,435 | Big Crk | S - Sec.<br>1,500 PE | 1929 | I | New Plt | UC-Summer '66 | DP for new plt apprvd-<br>Have Fed.Grant |
| Northwood - see Maumee R. Basin | | | | | | | | |
| Walbridge | 2,847 | Cedar Crk | S - Pr.+ D<br>1,000 PE | 1941 | I | To construct facils for disch. of wastes to Toledo sew.syst. | UC 6-15-66 | See Brd Find.& Ord. 4-12-66 |

# STATUS OF MUNICIPAL WASTE TREATMENT FACILITIES TRIBUTARY TO LAKE ERIE - Contd.

| Entity | 1965 Pop. | Receiving Stream | Type Sew.Syst. Treat.& Design | Date Built | Current Status | Additional Requirements | Schedule | Remarks |
|---|---|---|---|---|---|---|---|---|
| Sewer Districts | | | | | | | | |
| Cuyahoga County<br>Richmond Hts S.D. | | Euclid Crk | S - Sec. + D<br>1,200 PE | 1961 | A | | | |
| Lucas County<br>Metropolitan S.D.<br>Fuller's Creekside Subdiv. | | Trib's to Maumee Bay | S - Sec.+ D<br>1,000 PE | 1962 | A | | | |

★ U.S. GOVERNMENT PRINTING OFFICE : 1966 O—228-678